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

This document is a PWG Working Draft. For a definition of a "PWG Working Draft", see: ftp://ftp.pwg.org/pub/pwg/general/pwg-process30.pdf

This document is available electronically at:

ftp://ftp.pwg.org/pub/pwg/candidates/cs-sm20-pjt10-20120801-5108.07.pdf

Copyright © 2012 The Printer Working Group. All rights reserved.

This document may be copied and furnished to others, and derivative works that comment on, or otherwise explain it or assist in its implementation may be prepared, copied, published and distributed, in whole or in part, without restriction of any kind, provided that the above copyright notice, this paragraph and the title of the Document as referenced below are included on all such copies and derivative works. However, this document itself may not be modified in any way, such as by removing the copyright notice or references to the IEEE-ISTO and the Printer Working Group, a program of the IEEE-ISTO.

Title: *PWG Print Job Ticket and* Associated Capabilities *(PJT)*

The IEEE-ISTO and the Printer Working Group DISCLAIM ANY AND ALL WARRANTIES, WHETHER EXPRESS OR IMPLIED INCLUDING (WITHOUT LIMITATION) ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

The Printer Working Group, a program of the IEEE-ISTO, reserves the right to make changes to the document without further notice. The document may be updated, replaced or made obsolete by other documents at any time.

The IEEE-ISTO takes no position regarding the validity or scope of any intellectual property or other rights that might be claimed to pertain to the implementation or use of the technology described in this document or the extent to which any license under such rights might or might not be available; neither does it represent that it has made any effort to identify any such rights.

The IEEE-ISTO invites any interested party to bring to its attention any copyrights, patents, or patent applications, or other proprietary rights which may cover technology that may be required to implement the contents of this document. The IEEE-ISTO and its programs shall not be responsible for identifying patents for which a license may be required by a document and/or IEEE-ISTO Industry Group Standard or for conducting inquiries into the legal validity or scope of those patents that are brought to its attention. Inquiries may be submitted to the IEEE-ISTO by e-mail at: ieee-isto@ieee.org.

The Printer Working Group acknowledges that the IEEE-ISTO (acting itself or through its designees) is, and shall at all times, be the sole entity that may authorize the use of certification marks, trademarks, or other special designations to indicate compliance with these materials.

Use of this document is wholly voluntary. The existence of this document does not imply that there are no other ways to produce, test, measure, purchase, market, or provide other goods and services related to its scope.

**About the IEEE-ISTO**

The IEEE-ISTO is a not-for-profit corporation offering industry groups an innovative and flexible operational forum and support services. The IEEE-ISTO provides a forum not only to develop standards, but also to facilitate activities that support the implementation and acceptance of standards in the marketplace. The organization is affiliated with the IEEE (<http://www.ieee.org/>) and the IEEE Standards Association ([http://standards.ieee.org/)](http://standards.ieee.org/%29).

For additional information regarding the IEEE-ISTO and its industry programs visit:

<http://www.ieee-isto.org>.

**About the IEEE-ISTO PWG**

The Printer Working Group (or PWG) is a Program of the IEEE Industry Standards and Technology Organization (ISTO) with member organizations including printer manufacturers, print server developers, operating system providers, network operating systems providers, network connectivity vendors, and print management application developers. The group is chartered to make printers and the applications and operating systems supporting them work together better. All references to the PWG in this document implicitly mean “The Printer Working Group, a Program of the IEEE ISTO.” In order to meet this objective, the PWG will document the results of their work as open standards that define print related protocols, interfaces, procedures and conventions. PrintService manufacturers and vendors of printer related software will benefit from the interoperability provided by voluntary conformance to these standards.

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:

http://www.pwg.org

Contact information:

The Printer Working Group

c/o The IEEE Industry Standards and Technology Organization

445 Hoes Lane

Piscataway, NJ 08854

USA

**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](http://www.pwg.org/mailhelp.html) 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.

Table of Contents

1. Introduction 9

2. Terminology 10

2.1 Conformance Terminology 10

2.2 Other Terminology 10

2.2.1 Conventions used in figures 10

3. Requirements 11

3.1 Rationale for PrintJobTicket and Associated Capabilities 11

3.2 Out of Scope 11

3.3 Design Requirements 11

4. PrintJobTicket 12

4.1 Overview 12

4.2 MustHonor element processing 13

4.3 Job Ticket Precedence 14

5. PrintServiceDescription 15

6. PrintJobTicket Element Groups 16

6.1 PrintDocumentProcessing 16

6.1.1 CoverCol Datatype 19

6.1.2 FinishingsCol Datatype 19

6.1.3 InsertSheet Element 20

6.1.4 MediaCol and MediaSize Elements 20

6.1.5 Page Ranges Element 22

6.1.6 PdlInitFiles Element 22

6.1.7 Resolution Element 23

6.1.8 SeparatorSheets Element 23

6.2 PrintJobDescription 24

6.2.1 DocumentFormatDetailsSupplied Element 26

6.3 PrintJobProcessing 26

6.3.1 JobAccountingSheets Element 28

6.3.2 JobErrorSheet Element 28

6.3.3 JobSaveDisposition Element 29

6.4 JobSheetsCol Element 30

6.4.1 Overrides Element 30

6.4.2 *PagesPerSubset Element* 31

6.4.3 ProofPrint Element 31

7. PrintDocumentTicket Element Groups 32

7.1 PrintDocumentDescription 33

8. Conformance Requirements 34

8.1 PrintJobTicket Conformance Requirements 34

8.2 Print Service Conformance Requirements 36

8.3 PrintDocumentTicket Conformance Requirements 37

9. Internationalization Considerations 38

10. Security Considerations 38

11. IANA Considerations 39

12. References 39

12.1 Normative References 39

12.2 Informative References 41

13. Authors' Addresses 41

14. Appendix A: PrintJobTicket Elements’ Semantic Information (Normative) 42

15. Appendix B: PrintServiceCapabilities (Normative) 62

16. Appendix C: Keyword Well-Known Values (Informative) 67

17. Appendix D: Keyword Value extension patterns (Informative) 75

18. Appendix E: PrintServiceJobCapabilities (Normative) 76

19. Appendix F: Sample PrintJobTicket (Informative) 78

20. Appendix G: Sample PrintJobTicketCapabilities (Informative) 80

21. Appendix H – IPP Mapping (Informative) 84

21.1 Changes to remove some IPP specific aspects 84

21.2 Attribute Group Mapping 85

List of Figures

Figure 1 Model Conventions 10

Figure 2 PrintJobTicket 12

Figure 3 PrintDocumentProcessing (1) 17

Figure 4 PrintDocumentProcessing (2) 18

Figure 5 CoverCol Datatype 19

Figure 6 FinishingsCol Datatype 19

Figure 7 InsertSheet 20

Figure 8 MediaCol and MediaSize 21

Figure 9 PageRanges 22

Figure 10 PdlInitFiles 22

Figure 11 Resolution 23

Figure 12 SeparatorSheets 23

Figure 13 PrintJobDescription (1) 24

Figure 14 PrintJobDescription (2) 25

Figure 15 DocumentFormatDetailsSupplied 26

Figure 16 Job Processing 27

Figure 17 JobAccountingSheets Datatype 28

Figure 18 JobErrorSheet 28

Figure 19 JobSaveDisposition 29

Figure 20 JobSheetsCol 30

Figure 21 Overrides 30

Figure 22 PagesPerSubset 31

Figure 23 ProofPrint 31

Figure 24 PrintDocumentTicket 32

Figure 25 PrintDocumentDescription 33

Figure 26 PrintServiceJobCapabilities 77

List of Tables

Table 1 Descriptive PrintJobTicket Elements 35

Table 2 Processing PrintJobTicket Elements 35

Table 3 Print Service Elements 37

Table 4 PrintJobTicket Element Summary 42

Table 5 PrintServiceCapabilities Syntax For PrintJobTicket Elements 62

Table 6 Keyword Well Known Values 68

Table 7 Keyword Value extension patterns 75

Table 8 Subset of PrintServiceDescription Elements 76

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.

1. Terminology
	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

* 1. 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”.

* + 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 Model Conventions

1. Requirements
	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.

* 1. 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)
	1. Design Requirements
3. This specification includes all the PrintJobTicket related elements. Included in this are:
	1. The descriptive elements for Jobs and Documents
	2. The processing elements for Jobs and Documents
	3. The Print Service capability elements
	4. A limited set of Print Service descriptive elements.
4. An associated free standing XML schema for the elements is published.

1. PrintJobTicket
	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 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.

* 1. 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.

* 1. 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.

1. 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. ThePrintServiceJobCapabilitieselement group contains the PrintJobCreationElements subset, PrintJobTicketCapabilities, and the PrintDocumentCapabilities
3. 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.

* 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 PrintDocumentProcessing (1)



Figure PrintDocumentProcessing (2)

* + 1. CoverCol Datatype

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



Figure CoverCol Datatype

* + 1. 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 FinishingsCol Datatype

* + 1. InsertSheet Element

Figure 7 shows the constituent elements of the InsertSheet element.



Figure InsertSheet

* + 1. 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 MediaCol and MediaSize

* + 1. Page Ranges Element

Figure 9 shows the constituent elements of the PageRanges element.



Figure PageRanges

* + 1. PdlInitFiles Element

Figure 10 shows the constituent elements of the PdlInitFiles element.



Figure PdlInitFiles

* + 1. Resolution Element

Figure 11 shows the constituent elements of the Resolution element.



Figure Resolution

* + 1. SeparatorSheets Element

Figure 12 shows the constituent elements of the SeparatorSheets datatype.



Figure SeparatorSheets

* 1. 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 PrintJobDescription (1)



Figure PrintJobDescription (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 DocumentFormatDeviceId.



Figure DocumentFormatDetailsSupplied

* 1. 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 Job Processing

* + 1. JobAccountingSheets Element

Figure 17 shows the constituent elements of the JobAccountingSheets element.



Figure JobAccountingSheets Datatype

* + 1. JobErrorSheet Element

Figure 18 shows the constituent elements of the JobErrorSheet element.



Figure JobErrorSheet

* + 1. JobSaveDisposition Element

Figure 19 shows the constituent elements of the JobSaveDisposition element.



Figure JobSaveDisposition

* 1. JobSheetsCol Element

Figure 20 shows the constituent elements of the JobSheetsCol element.



Figure JobSheetsCol

* + 1. Overrides Element

Figure 21 shows the constituent elements of the Overrides element.



Figure Overrides

* + 1. *PagesPerSubset Element*

Figure 22 shows the constituent elements of the PagesPerSubset element.



Figure PagesPerSubset

* + 1. ProofPrint Element

Figure 23 shows the constituent elements of the ProofPrint element.



Figure ProofPrint

1. PrintDocumentTicket Element Groups

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



Figure PrintDocumentTicket

* 1. PrintDocumentDescription

Figure 25 shows the constituent elements of the PrintDocumentDescription element



Figure PrintDocumentDescription

1. 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.

* 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 Descriptive PrintJobTicket Elements

|  |  |  |  |
| --- | --- | --- | --- |
|  | Element Name | Group | Conformance |
|  | Compression/CompressionSupplied | PrintJobDescription | CONDITIONALLY REQUIRED |
|  | DocumentFormat/DocumentFormatSupplied | PrintJobDescription | REQUIRED |
|  | DocumentUri(note 1) | PrintDocumentDescription | REQUIRED |
|  | JobName | PrintJobDescription | REQUIRED |
|  | JobOriginatingUserName | PrintJobDescription | REQUIRED |
|  | JobOriginatingUserUri | PrintJobDescription | CONDITIONALLY REQUIRED |

Note 1: Element indicates support for printing by reference

Table Processing PrintJobTicket Elements

|  |  |  |  |
| --- | --- | --- | --- |
|  | Element Name | Group | Conformance |
|  | JobCopies or Copies | PrintJobProcessing or PrintDocumentProcessing | REQUIRED |
|  | JobFinishings or Finishings { JogOffset, None, Punch, Staple, StapleBottomLeft, StapleBottomRight, StapleDualBottom, StapleDualLeft, StapleDualRight, StapleDualTop, StapleTopLeft, StapleTopRight,} | PrintJobProcessing or PrintDocumentProcessing | CONDITIONALLY REQUIRED |
|  | Media  | PrintDocumentProcessing | REQUIRED |
|  | MediaType | PrintDocumentProcessing | REQUIRED |
|  | MustHonor or JobRequiredElements | PrintJobTicket or PrintJobProcessing | REQUIRED |
|  | OrientationRequested | PrintDocumentProcessing | REQUIRED |
|  | PageRanges | PrintDocumentProcessing | REQUIRED |
|  | PrintColorMode | PrintDocumentProcessing | CONDITIONALLY REQUIRED |
|  | Quality | PrintDocumentProcessing | REQUIRED |
|  | Sides | PrintDocumentProcessing | CONDITIONALLY REQUIRED |

* 1. 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 Print Service Elements

|  |  |  |  |
| --- | --- | --- | --- |
|  | Element Name | Group | Conformance |
|  | CharsetConfigured | PrintServiceDescription | REQUIRED (Note 1) |
|  | ColorSupported | PrintServiceDescription | REQUIRED |
|  | DocumentFormatSupported | PrintServiceDescription | REQUIRED |
|  | DocumentPasswordSupported | PrintServiceDescription | OPTIONAL |
|  | JobPasswordEncryptionSupported | PrintServiceDescription | OPTIONAL |
|  | JobPasswordSupported | PrintServiceDescription | OPTIONAL |
|  | MediaBottomMarginSupported, MediaLeftMarginSupported, MediaRightMarginSupported, MediaTopMarginSupported | PrintServiceDescription | OPTIONAL |
|  | PwgRasterDocumentResolutionSupported | PrintServiceDescription | OPTIONAL |
|  | DocumentFormatDetailsSuppliedSupported | PrintServiceDescription | OPTIONAL |
|  | PwgRasterDocumentSheetBack | PrintServiceDescription | OPTIONAL |
|  | PwgRasterDocumentTypeSupported | PrintServiceDescription | OPTIONAL |

Note 1: The XML binding uses utf-8.

* 1. 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.

1. 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.

1. 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.

1. IANA Considerations

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

1. References
	1. Normative References

[DCMI] Dublin Core Metadata Initiative, "Dublin Core Metadata Registry, 1995-2011, <http://dcmi.kc.tsukuba.ac.jp/dcregistry/>

[IPPREG] IANA, "Internet Printing Protocol (IPP) Registrations ", December 2011, <http://www.iana.org/assignments/ipp-registrations/ipp-registrations.xml>

 [RFC2911] T. Hastings, R. Herriot, R. deBry, S. Isaacson, P. Powell, "Internet Printing Protocol/1.1 Model and Semantics", RFC2911, September 2000, ftp://ftp.rfc-editor.org/in-notes/rfc2911.txt

[RFC3381] T. Hastings, H. Lewis, R. Bergman, "Internet Printing Protocol (IPP): Job Progress Attributes", RFC3381, September 2002, ftp://ftp.rfc-editor.org/in-notes/rfc3381.txt

[PWG5100.1] T. Hastings, D. Fulman, "Internet Printing Protocol (IPP): finishings attribute values extension", PWG5100.1-2001, February 2001, ftp://ftp.pwg.org/pub/pwg/candidates/cs-ippfinishings10-20010205-5100.1.pdf

[PWG5100.2] T. Hastings, R. Bergman, "IPP "output-bin" attribute extension", PWG5100.2-2001, February 2001, ftp://ftp.pwg.org/pub/pwg/candidates/cs-ippoutputbin10-20010207-5100.2.pdf

 [PWG5100.3] T. Hastings, K. Ocke, "Internet Printing Protocol (IPP): Production Printing Attributes Set1", PWG5100.3-2001, February 2001, ftp://ftp.pwg.org/pub/pwg/candidates/cs-ippprodprint10-20010212-5100.3.pdf

[PWG5100.5] T. Hastings, D. Carney, P. Zehler, "Internet Printing Protocol (IPP): Document Object", PWG5100.5-2003, October 2003, ftp://ftp.pwg.org/pub/pwg/candidates/cs-ippdocobject10-20031031-5100.5.pdf

[PWG5100.6] P. Zehler, K. Ocke, R. Herriot, "Internet Printing Protocol (IPP): Page Overrides", PWG5100.6-2003, October 2003, ftp://ftp.pwg.org/pub/pwg/candidates/cs-ipppageoverride10-20031031-5100.6.pdf

[PWG5100.7] T. Hastings, P. Zehler, "Internet Printing Protocol (IPP): Job Extensions", PWG5100.7-2003, October 2003, ftp://ftp.pwg.org/pub/pwg/candidates/cs-ippjobext10-20031031-5100.7.pdf

[PWG5100.11] T. Hastings, D. Fulman, "IPP Job and Printer Extensions - Set 2", PWG5100.11-2010, October 2010, ftp://ftp.pwg.org/pub/pwg/candidates/cs-ippjobprinterext10-20101030-5100.11.pdf

 [PWG5101.5] P. Zehler, S. Albright, T. Hastings, “Printer Working Group (PWG) Semantic Model", PWG5101.5-2004, January 2004, ftp://ftp.pwg.org/pub/pwg/candidates/cs-sm10-20040120-5105.1.pdf

[PWG5108.1] W. Wagner, P. Zehler, “MFD Model and Common Semantics Version 1.0", PWG5108.1-2011, April 2011, ftp://ftp.pwg.org/pub/pwg/candidates/cs-sm20-mfdmodel10-20110415-5108.1.pdf

[PWG5108.02] N. Chen, P. Zehler, “Network Scan Service Semantic Model and Service Interface Version 1.0", PWG5108.02-2011, April 2009, ftp://ftp.pwg.org/pub/pwg/candidates/cs-sm20-scan10-20090410-5108.02.pdf

[PWG5102.4] M. Sweet, “PWG Raster Format", PWG5102.4-2012, April 2012, ftp://ftp.pwg.org/pub/pwg/candidates/cs-ippraster10-20120420-5102.4.pdf

 [PWG5100.JPS3] M. Sweet, I. McDonald, “IPP: Job and PrintService Extensions – Set 3", PWG5100.JPS3-2012, July 2012, ftp://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippjobprinterext3v10-20120525.pdf

[WS-Print] M. Fenelon, "Print Service Definition Version 1.0 for Web Services on Devices", November 2006, <http://msdn.microsoft.com/en-us/windows/hardware/gg463146>

[MFD-REQ] N. Chen, I. McDonald, W. Wagner, P. Zehler, “PWG Multifunction Device Service Model Requirements ", PWG5101.5-2004, September 2010, ftp://ftp.pwg.org/pub/pwg/informational/req-mfdreq10-20100901.pdf

[IEEE2600] IEEE 2600™-2008 IEEE Standard for Information Technology: Hardcopy Device and System Security, 2008

[XMLDAT] P. Biron, A. Malhotra, “XML Schema Part 2: Datatypes Second Edition", W3C Recommendation, October 2004, <http://www.w3.org/TR/xmlschema-2/>

* 1. Informative References

[JTAPI] G. Petrie, C. Alimpich, T. Kamppeter, I. McDonald, “FSG/OpenPrinting Job Ticket Application Programming Interface (JTAPI) version 1.0", March 2005, ftp://ftp.pwg.org/pub/pwg/fsg/jobticket/JTAPI\_Spec/fsg-openprinting-job-ticket-api-v0100-20050315.pdf

1. Authors' Addresses

 Peter Zehler

 Xerox Research Center Webster

Email: Peter.Zehler@Xerox.com

Voice: (585) 265-8755

Fax: (585) 265-7441

US Mail: Peter Zehler

Xerox Corp.

800 Phillips Rd.

M/S 128-25E

Webster NY, 14580-9701

Additional contributors:

Nancy Chen – OkiData

Justin Hutchings - Microsoft

Ira McDonald – High North

 Glen Petrie - Epson

Michael Sweet – Apple

Jerry Thrasher - Lexmark

 Larry Upthegrove

William Wagner - TIC

1. 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 PrintJobTicket Element Summary

| **Element Name** | **Multivalued** | **Syntax**  | **Constraint** | **Group** | **Reference** |
| --- | --- | --- | --- | --- | --- |
|  | **Description (values)**  |
| ColorSupported | 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. |
| Compression | 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., Compress, Deflate, Gzip, None)* |
| CompressionSupplied | 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., Compress, Deflate, Gzip, None)* |
| Copies | 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) |
| CoverBack | No | *complex*  | 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) |
| CoverFront | No | *complex*  | 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) |
| CoverType | 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., NoCover, PrintNone, PrintFront, PrintBack, PrintBoth)* (Included in CoverBack, CoverFront, JobCoverBack & JobCoverFront ) |
| CrossFeed | 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) |
| DocumentCharsetSupplied | No | Keyword | Type2  | 2,4 | [PWG5100.7] §5.2.2 |
|  | Default charset of the Documents content. Values:CharsetWKV, StringExtensionPattern (e.g., *utf-8, iso-10646-unicode-latin1*) |
| DocumentCopies | 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) |
| DocumentDigitalSignature | 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., *None, Pgp, Xdsig*) |
| DocumentDigitalSignatureSupplied | 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., *None, Pgp, Xdsig*) |
| DocumentFormat | No | Keyword | Type2 | 2,4 | [RFC2911] §3.2.1.1 |
|  | Document format (i.e., PDL) for the Document content, Values: DocumentFormatWKV, MimeExtensionPattern (e.g., *application/postscript, image/jpeg, text/plain*) (Included in DocumentFormatDetailsSupplied)  |
| DocumentFormatDetailsSupplied | 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) |
| DocumentFormatDeviceId | No | String | Maxlength=127 | 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)  |
| DocumentFormatSupplied | No | Keyword | Type2 | 2 | [PWG5100.7] §5.2.5 |
|  | Document format (i.e., PDL) for the Document content, Values: DocumentFormatWKV, MimeExtensionPattern (e.g., *application/postscript, image/jpeg, text/plain*) |
| DocumentFormatVersion | No | String | Type2 | 2,4 | [PWG5100.7] §3.2.5.7 |
|  | Level or version of the DocumentFormat. (Included in DocumentFormatDetailsSupplied)  |
| DocumentFormatVersionSupplied | No | String | Type2 | 2 | [PWG5100.7] §5.2.6 |
|  | Level or version of the DocumentFormat. |
| DocumentMessage | 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 |
| DocumentMessageSupplied | 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 |
| DocumentMetadata | 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 <<http://dublincore.org/schemas/xmls/qdc/2008/02/11/qualifieddc.xsd>>. See PWG5100.JPS3 § 5.1.1 for IPP encoding. |
| DocumentName | No | String | Maxlength=255 | 4 | [PWG5100.5] §9.1.21 |
|  | Name for the Document to be used in an implementation specific manner. |
| DocumentNameSupplied | 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. |
| DocumentNaturalLanguage | No | Keyword | Type2 | 2,4 | [RFC2911] §3.2.1.1 |
|  | Primary Natural Language of the Document. Values: NaturalLanguageWKV, NatLangExtensionPattern (e.g., *en, de, fr, en-us*) (Included in DocumentFormatDetailsSupplied)  |
| DocumentNumbers | Yes | RangeOfInteger | 1:MAX | 3 | [PWG5100.6] §4.1.2 |
|  | Specifies the documents in a Job for override processing. (Included in Overrides)  |
| DocumentPages | 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. |
| DocumentPassword | 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. |
| DocumentPasswordSupported | 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.  |
| DocumentSourceApplicationName | 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)  |
| DocumentSourceApplicationVersion | 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)  |
| DocumentSourceOsName | 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., *LINUX, OSX , WIN32* ) (Included in DocumentFormatDetailsSupplied)  |
| DocumentSourceOsVersion | 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)  |
| DocumentUri | No | URI | Unlimited | 2,4 | [PWG5100.5] §9.1.28 |
|  | Reference to the document to print. (See also [rfc2911] § 3.3.2) |
| ElementsNaturalLanguage | No | Keyword  | Type2  | 2 | [rfc2911] §4.3.20 |
|  | Identifies the natural language used for any Client supplied strings. Values: NaturalLanguageWKV, NatLangExtensionPattern (e.g., *en, de, fr, en-us)* |
| Feed | 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) |
| FeedOrientation | 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., LongEdgeFirst* *ShortEdgeFirst)* |
| Finishings | 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., *Bale, Bind, BindLeft, BookletMaker, EdgeStitch, Fold, JogOffset, None, Punch, Staple, StapleTopLeft, Trim*). (See also JobFinishings Job element) |
| FinishingsCol | 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)  |
| FinishingTemplate | No | String  | Maxlength=1023 | 1 | [PWG5100.3] §3.2.1 |
|  | A string specifying some particular finishing operation. (Included in FinishingsCol, JobFinishingsCol) |
| FontNameRequested | 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., Arial, Courier)* |
| FontSizeRequested | 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. |
| ForceFrontSide | 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. |
| ImpositionTemplate | 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., None, Signature)* |
| Impressions | No | Integer | 0:MAX | 2,4 | [RFC2911] §4.3.17.2 |
|  | Total size in number of impressions in all the Job‟s Document(s). |
| InsertAfterPageNumber | 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) |
| InsertCount | No | Integer  | 0:MAX | 1 | [PWG5100.3] §3.5.2 |
|  | Specifies the number of Insert Sheet to insert. (Included in InsertSheet) |
| InsertSheet | 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) |
| JobAccountingID | 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. |
| JobAccountingOutputBin | 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., *Bottom, FaceUp, LargeCapacity, Left, MailboxN\*, Rear, Right, Side, StackerN\*, Top, TrayN\*. \*Note: N is replaced by a cardinal numbe*r) |
| JobAccountingSheets | No | complex | N/A | 3 | [PWG5100.3] §3.8 |
|  | Specifies the accounting sheet for a job. (Contains JobAccountingSheetsType, Media/ MediaType or MediaCol, JobAccountingOutputBin). |
| JobAccountingSheetsType | No | Keyword | Type3  | 3 | [PWG5100.3] §3.8.1 |
|  | Specifies the accounting sheet format for a job. Values: JobAccountingSheetsTypeWKV, KeywordNsPattern *(e.g., None, Standard)*  (Included in JobAccountingSheets)  |
| JobAccountingUserID | 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  |
| JobCollationType | 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., CollatedDocuments)* |
| JobCopies | No | Integer  | 1:MAX | 3 | [PWG5100.7] §4.1.1 |
|  | The number of copies of the Job to be printed. (See also Copies)  |
| JobCoverBack | 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) |
| JobCoverFront | 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) |
| JobDelayOutputUntil | 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) |
| JobDelayOutputUntilTime | 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) |
| JobErrorAction | No | String  | Type2 | 3 | [PWG5100.JPS3] §5.2.1 |
|  | pecifies the action a Printer takes when an error is encountered in a document during processing of the job. (e.g., AbortJob, SuspendJob) |
| JobErrorSheet | No | complex | N/A | 3 | [PWG5100.3] §3.9 |
|  | Specifies the error sheet for a job. (Contains JobErrorSheetType, JobErrorSheetWhen, Media/MediaType or MediaCol). |
| JobErrorSheetType | No | Keyword | Type3  | 3 | [PWG5100.3] §3.9.1 |
|  | Specifies the error sheet format for a job. Values: JobErrorSheetTypeWKV, KeywordNsPattern *(e.g., None, Standard)* (Included in JobErrorSheet) |
| JobErrorSheetWhen | No | Keyword | Type2  | 3 | [PWG5100.3] §3.9.2 |
|  | Indicates conditions required to produce JobErrorSheet. Values: JobErrorSheetWhenWKV, KeywordNsExtensionPattern *(e.g., OnError, Always)* (Included in JobErrorSheet)  |
| JobFinishings | Yes | Keyword  | Type2  | 3 | [PWG5100.7] §4.1.4 |
|  | Identifies the finishings that the PrintService uses for the Job. Values: FinishingsWKV, KeywordNsExtensionPattern (e.g., *Bale, Bind, BookletMaker, Fold, JogOffset, None, Punch, Staple, StapleTopLeft, Trim*). (See also Finishings element) |
| JobFinishingsCol | 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)  |
| JobHoldUntil | 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: NoHold, Indefinite, DayTime, Evening, Night, Weekend, SecondShift, ThirdShift) |
| JobHoldUntilTime | 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., Fri, 03 May 2002 08:49:37 GMT) |
| JobMandatoryElements | 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”. |
| JobMessageFromOperator | 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”) |
| JobMessageToOperator | 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”) |
| JobMoreInfo | 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. |
| JobName | No | String | Maxlength=255 | 2 | [rfc2911] §4.3.5 |
|  | User friendly name of the Job. It does not have to be unique. |
| JobOriginatingUserName | 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. |
| JobOriginatingUserUri | 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). |
| JobPages | 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. |
| JobPassword | 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. |
| JobPasswordEncryption | 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) |
| JobPhoneNumber | No | String  | Maxlength=127 | 3 | [PWG5100.11] §7.7, |
|  | Contains the contact telephone number for this Job. |
| JobPriority | No | Integer | 1:100 | 3 | [rfc2911] §4.2.1 |
|  | Priority for scheduling the Job. A higher value specifies a higher priority. |
| JobRecipientName | No | String | Maxlength=255 | 3 | [PWG5100.11 ]§7.8 |
|  | Name of the intended recipient of the Job. |
| JobSaveDisposition | 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 *(Contains SaveDisposition, SaveInfo)* |
| JobSheetMessage | No | String | Maxlength=1023 | 3 | [PWG5100.3] §3.12 |
|  | Conveys a message that is delivered with the job.  |
| JobSheets | 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)* |
| JobSheetsCol | 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)  |
| JobUuid | 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). |
| Koctets | 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. |
| LastDocument | No | Boolean | N/A | 4 | [PWG5100.5] §9.1.35 |
|  | Indicates whether or not this Document is the last Document in the Job. |
| MediaBottomMargin | 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. |
| MediaBottomMarginSupported | 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 |
| MediaLeftMargin | 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. |
| MediaLeftMarginSupported | 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 |
| MediaRightMargin | 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. |
| MediaRightMarginSupported | 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 |
| MediaSheets | 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) |
| MediaTopMargin | 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. |
| MediaTopMarginSupported | 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 |
| Media | 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., na\_letter\_8.5x11in, iso\_a4****\_****210x297mm, na\_monarch****\_****3.875x7.5in, choice\_iso\_a4\_210x297mm\_na\_letter\_8.5x11in. )* (Included in CoverBack, CoverFront, InsertSheet, SeparatorSheets, JobAccountingSheets, JobCoverBack, JobCoverFront, JobErrorSheet, JobSheetsCol) |
| MediaBackCoating | 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)  |
| MediaCol | 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) |
| MediaColor | No | Keyword | Type3  | 1 | [PWG5100.3] §3.13.4 |
|  | Indicates the desired color of the media being specified. Values: MediaColorWKV, KeywordNsExtensionPattern (e.g., *no-color, white, pink, yellow, blue, green, buff, goldenrod, red, gray, ivory, orange)* (See also [pwg5101.1] §4) (Included in MediaCol)  |
| MediaFrontCoating | 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., None, Glossy, HighGloss, SemiGloss, Satin, Matte) (Included in MediaCol)  |
| MediaGrain | No | Keyword | Type3  | 1,3 | [PWG5100.11] §11.5.2 |
|  | Indicates the grain of the media. Values: MediaGrainWKV, KeywordNsExtensionPattern *(e.g, x-direction, y-direction)* (Included in MediaCol)  |
| MediaHoleCount | 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) |
| MediaInfo | 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) |
| MediaInputTrayCheck | 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., Top, Middle, Bottom, Side, LargeCapacity, Envelope, Main, Manual. See [RFC2911] Appendix C)* |
| MediaKey | 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) |
| MediaOrderCount | 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) |
| MediaPrePrinted | No | Keyword | Type3  | 1,3 | [PWG5100.3] §3.13.5 |
|  | Indicates the pre-printed characteristics of the desired media. Values: MediaPrePrintedWKV, KeywordNsExtensionPattern (e.g., *Blank, PrePrinted, LetterHead*) (Included in MediaCol)  |
| MediaRecycled | No | Keyword | Type3  | 1,3 | [PWG5100.3] §3.13.11 |
|  | Indicates the recycled characteristics of the media. Values: MediaRecycledWKV, KeywordNsExtensionPattern *(e.g., None, Standard)* (Included in MediaCol*)*  |
| MediaSheets | No | Integer | 0:MAX | 2,4 | [RFC2911] §4.3.17.2 |
|  | Total size in number of impressions in all the Job‟s Document(s). |
| MediaSize  | 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)  |
| **MediaSizeName**  | 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., na\_letter\_8.5x11in, iso\_a4****\_****210x297mm, na\_monarch****\_****3.875x7.5in)*. (Included in MediaCol) |
| **MediaSource**  | 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., Auto, Bottom, Envelope, LargeCapacity, Top, Tray1)* (Included in MediaCol) |
| **MediaThickness**  | 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) |
| **MediaTooth**  | No | Keyword | Type3  | 1,3 | [PWG5100.11] §11.5.1 |
|  | The tooth (or roughness) of the media. Values: MediaToothWKV, KeywordNsExtensionPattern (e.g., Fine, Medium, Coarse, Linen) (Included in MediaCol)  |
| MediaType | 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., *stationery, transparency envelopecontinuous, tab-stock, pre-cut-tabs, photographic, cardstock, other*) (Included in CoverBack, CoverFront, InsertSheet, JobAccountingSheets, JobCoverBack, JobCoverFront, JobErrorSheet, JobSheetsCo, MediaCol l, SeparatorSheets) |
| MediaWeightMetric | 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) |
| MultipleDocumentsHandling | 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. SingleDocument, SeparateDocumentCollatedCopies, SingleDocumentNewSheet)* |
| NumberOfPagesInSubset | 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)  |
| NumberUp | No | Integer | 1:MAX | 1 | [rfc2911] §4.2.9 |
|  | Indicates the number of Input pages that the PrintService is to image on one impression. |
| OrientationRequested | 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., Portrait, Landscape, ReverseLandscape, ReversePortrait)* |
| OutputBin | 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., *Bottom, FaceUp, LargeCapacity, Left, MailboxN\*, Rear, Right, Side, StackerN\*, Top, TrayN\*. \*Note: N is replaced by a cardinal numbe*r) |
| OutputDevice | 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. |
| Overrides | 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)  |
| OverridingElements | 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) |
| PageDelivery | 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., ReverseOrderFaceDown, SameOrderFaceUp, SystemSpecified)* . (See also PageOrderReceived) |
| PageOrderReceived | 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., 1ToNOrder, NTo1Order) |
| PageRanges | Yes | RangeOfInteger | 1:MAX | 1 | [RFC2911] §4.2.7 |
|  | Specifies a range of pages in the document data to be output. |
| Pages | Yes | RangeOfInteger | 1:MAX | 3 | [pwg5100.6] §4.1.1 |
|  | Specifies a range of pages in the document PDL data. (Included in Overrides)  |
| PagesPerSubset | 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) |
| PdlInitFile | Yes | Complex  | N/A | 1 | [PWG5100.11] §7.10 |
|  | Controls initialization of the PrintService’s Page Description Language (PDL) interpreter. (Contains PdlInitFileEntry, PdlInitFileLocation. PdlInitFileName) |
| PdlInitFileEntry | 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 PdlInitFile) |
| PdlInitFileLocation | 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 PdlInitFile) |
| PdlInitFileName | 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 PdlInitFileLocation element. (Included in PdlInitFile) |
| PdlOverrideSupported | No | Keyword  | Type2 | 1 | [RFC2911] §4.4.28 |
|  | Expresses the ability for a PrintService to override document data instructions with PrintJobTicket. Values: PdlOverrideSupportedWKV, KeywordNsExtensionPattern(e.g., NotAttempted, Attempted, Guaranteed) |
| PresentationDirectionNumberUp | 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)* |
| PrintColorMode | 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)  |
| PrintContentOptimize | 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)* |
| PrintRenderingIntent | 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) |
| ProofPrint | 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). |
| ProofPrint Copies | No | Integer  | 1:MAX | 3 | [PWG5100.11] §7.11.1.1 |
|  | The number of copies of the proof job to be printed.  |
| PwgRasterDocumentSheetBack | 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) |
| PwgRasterDocumentResolutionSupported | Yes | List of Resolution | N/A | 5 | [PWG5102.4] §10.2 |
|  | Lists the supported page bitmap resolutions in dots per inch |
| PwgRasterDocumentTypeSupported | 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) |
| Quality | No | Keyword | type2  | 1 | RFC2911] §4.2.13 |
|  | The output quality that the PrintService uses for the Job. Values: PrintQualityWKV, KeywordNsExtensionPattern *(e.g., Draft, Normal, High) Note:* FaxQualityWKV values are also included in the Quality definition for when this element is used in FaxOutJobTickets. |
| Resolution | 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) |
| SaveDisposition | 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., None, PrintSave, SaveOnly)* (Included in JobSaveDisposition)  |
| SaveDocumentFormat | 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) |
| SaveInfo | No | complex  | N/A | 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) |
| SaveLocation | 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) |
| SaveName | 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) |
| SeparatorSheets | 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) |
| SeparatorSheetsType | 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)  |
| SheetCollate | 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)* |
| Sides | 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)* |
| Stitching | No | complex  | N/A | 1 | [PWG5100.3] §3.2.2 |
|  | Provides detailed stitching parameters. (Included in FinishingsCol, JobFinishingsCol) (Contains StitchingReferenceEdge, StitchingOffset, StitchingLocations) |
| StitchingLocations | 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) |
| StitchingOffset | 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) |
| StitchingReferenceEdge | 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) |
| TemplateCreatorUserName | 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  |
| TemplateId | 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. |
| TemplateInfo | No | String | Maxlength=2047 | 2 | [PWG5108.02PWG5108.02] §8.1.3.2.14 |
|  | Used only when Ticket is created from a template. Information about the template used to create the Job Ticket. |
| TemplateName | 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.  |
| TemplateType | 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., *PrintJob*).  |
| Units | 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) |
| XDimension | 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) |
| XImagePosition | 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., None, Center)* |
| XImageShift | 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. |
| Xside1ImageShift | 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. |
| Xside2ImageShift | 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. |
| YDimension | 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) |
| YImagePosition | 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)* |
| YImageShift | 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. |
| Yside1ImageShift | 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. |
| Yside2ImageShift | 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. |

1. 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 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 |
| DocumentFormat | list of valid keywords | List of Keywords |
| DocumentFormatDetailsSupplied | list of valid keywords | List of Keywords |
| DocumentFormatDeviceId | 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 |
| 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 |
| PageOrderReceived | list of valid keywords | List of Keywords |
| PageRanges | element supported | Boolean |
| PagesPerSubset | element supported | Boolean |
| PdlInitFileEntry | list of valid keywords | List of Keywords |
| PdlInitFileLocation | list of valid keywords | List of Keywords |
| PdlInitFileName | 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 |
| 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 |

1. 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 and 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 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-desktop, 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-supp, 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, 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, EdgeStichRight, 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] |
| 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, 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, 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, by-pass-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, [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, ddnos, 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] |
| OutputChannelWKV | Other, Unknown, SerialPort, ParallelPort, IEEE1284Port, SCSIPort, FTP, TFTP, IEEE1394, DCERemoteProcCall, ONCRemoteProcCall, OLE, NamedPipe, ServerMessageBlock, DLLAPI, VxDAPI, SystemObjectManager, DECLAT, USB, IRDA, PortTCP, BidirPortTCP, PortHTTP,, [KeywordNsExtensionPattern] |
| PageDeliveryWKV | ReverseOrderFaceDown, ReverseOrderFaceUp, SameOrderFaceDown, SameOrderFaceUp, SystemSpecified, [KeywordNsExtensionPattern] |
| PageOrderReceivedWKV | 1ToNOrder, NTo1Order, [KeywordNsExtensionPattern] |
| PdlOverrideSupportedWKV | Attempted, Guaranteed, NotAttempted, [KeywordNsExtensionPattern] |
| PresentationDirectionNumberUpWKV | TobottomToleft, TobottomToright, ToleftTobottom, ToleftTotop, TorightTobottom, TorightTotop, TotopToleft, TotopToright, [KeywordNsExtensionPattern] |
| PrintColorModeWKV | Auto, BiLevel, Color, Highlight, Monochrome, ProcessBiLevel, ProcessMonochrome, [KeywordNsExtensionPattern] |
| PrintContentOptimizeWKV | Graphics, Photo, Text, TextAndGraphics, [KeywordNsExtensionPattern] |
| PrintQualityWKV | Draft, High, Normal, [KeywordNsExtensionPattern] |
| PrintRenderingIntentWKV | Absolute, Perceptual, Relative, Saturation, [KeywordNsExtensionPattern] |
| PwgRasterDocumentSheetBackWKV | Flipped, ManualTumble, Normal, Rotated, [KeywordNsExtensionPattern] |
| SaveDispositionWKV | None, PrintSave, SaveOnly, [KeywordNsExtensionPattern] |
| SeparatorSheetsTypeWKV | 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] |

1. 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 Keyword Value extension patterns

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

1. 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 Subset of PrintServiceDescription Elements

|  |  |  |
| --- | --- | --- |
|  | Element Name | Group |
|  | CharsetConfigured | PrintServiceDescription |
|  | ColorSupported | PrintServiceDescription |
|  | DocumentFormatSupported | PrintServiceDescription |
|  | DocumentPasswordSupported | PrintServiceDescription |
|  | JobPasswordEncryptionSupported | PrintServiceDescription |
|  | JobPasswordSupported | PrintServiceDescription |
|  | MediaBottomMarginSupported, MediaLeftMarginSupported, MediaRightMarginSupported, MediaTopMarginSupported | PrintServiceDescription |
|  | PwgRasterDocumentResolutionSupported | PrintServiceDescription |
|  | DocumentFormatDetailsSuppliedSupported | PrintServiceDescription |
|  | PwgRasterDocumentSheetBack | PrintServiceDescription |
|  | PwgRasterDocumentTypeSupported | PrintServiceDescription |

The PWG Semantic Model schema includes an element definition for an element group to carry the afore mentioned 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 PrintServiceJobCapabilities

1. 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": ""

 }

}

1. 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: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": ""

 }

}

1. Appendix H – IPP Mapping (Informative)
	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:
	1. CharsetWKV
	2. NaturalLanguageWKV
	3. ColorSpaceWKV
	4. DocumentFormatWKV
	5. MediaCoatingWKV
	6. MediaColorWKV
	7. MediaGrainWKV
	8. MediaToothWKV
	9. MediaInputTrayWKV
	10. MediaPreprintedWK
	11. MediaRecycledWKV
	12. MediaTypeWKV
	13. MediaSizeAliasNameWKV
	14. MediaSizeLegacyNamesWKV
	15. MediaSizeSelfDescribingNameWKV
	16. 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.
	1. The IPP datatypes NameWithoutLanguage, NameWithLanguage, TextWithoutLanguage and TextWithLanguage are mapped to the XML datatype String. Localization is handled globally by the ElementsNaturalLanguage element.
	2. The IPP datatype Enum is mapped to the XML datatype NMToken. See #1 above.
	3. 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.
	4. 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.

* 1. 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.