A Program of the IEEE-ISTO

pwg

Printer Working Group (PWG):

Semantic Model

IEEE-ISTO Printer Working Group

Standard XXXX.X-200X

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Abstract: This document is a high level overview of the Semantic Model defined by the PWG. This document briefly describes the semantic elements defined in various PWG documents and PWG documents submitted to the IETF. The Semantic Model also incorporates additions made by other groups addressing print systems. With every semantic element included a reference is provided to the document and section that details the semantic definition.

The Semantic Model contains a high level description of the Actions that operate on the objects and attributes in the model. This document does not describe the mapping of the semantics onto a specific protocol or network environment.

This document is available electronically at:

     ftp://ftp.pwg.org/pub/pwg/Semantic-Model/wd-sm10-20030820.pdf, .doc

> Deleted: **ftp://ftp.pwg.org/pub/pwg/standards/???.pdf, .doc, .rtf**

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67 For additional information regarding the IEEE-ISTO and its industry programs visit http://www.ieee-
68 isto.org.

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71 About the IEEE-ISTO PWG

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

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

85 For additional information regarding the Printer Working Group visit: http://www.pwg.org

86

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88 Contact information:

89   PWG Semantic Model; Web Page: http://www.pwg.org/sm/

90   PWG Semantic ModelMailing List: mailto:sm@pwg.org

91   To subscribe to the Print Services mailing list, send the following email:

92   1) Send it to mailto:majordomo@pwg.org

93   2) Leave the subject line blank

94   3) Put the following two lines in the message body:

95   subscribe sm

96   end

97 Implementers of this specification are encouraged to join the PWG Semantic Model Mailing List in
98 order to participate in any discussions of clarifications or review of registration proposals for
99 additional semantic elements or values. Requests for additional semantic elements or values, for
100 inclusion in this specification, should be sent to the PWG Semantic Model Mailing list for
101 consideration.

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190   **Table of Figures**

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206   **Table of Tables**

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217 1 Introduction

218 This document is a high level overview of the Semantic Model defined by the PWG. This
219 document briefly describes the semantic elements defined in various PWG documents and PWG
220 documents submitted to the IETF. The Semantic Model also incorporates additions made by other
221 groups addressing print systems. With every semantic element included a reference is provided to
222 the document and section that details the semantic definition.

223 The Semantic Model contains a high level description of the Actions that operate on the objects and
224 Elements in the model. This document does not describe the mapping of the semantics onto a
225 specific protocol or network environment.

226 2 Terminology

Action	A request that a Print Client makes to an object to perform some activity. The object returns a response to the Print Client that contains some information about the effect of the action on the object.
Data Class	A template for data describing an object and representing its state. Each Element in the data class represents a semantic element of the associated object.
Document	An object containing descriptive and state information for a logical unit of information to be printed. The object may contain processing information. The document content is represented by a single data (e.g. PDL, image) file and contains Pages.
Document Processing Elements	Document Elements supplied by the Print Client to direct the printing of a Document that the Printer copies to the Document. Examples: Copies, Finishings, Media, NumberUp.
End User	A print client that has no special rights on the printer. The End User typically submits jobs. The End User is allowed to query the printer, jobs and documents and control jobs based on policy.
Element	In this Document *element* is used to describe a characteristic of an object. (In XML an element is a construct that defines a component of an object.)
Impression	Everything printed on a single side of a media
Job	An object that represents the submission of work for the printer. It contains descriptive and state information as well as default Document Processing Elements. Jobs contain one or more Documents
Job Description Elements	Job Elements supplied by the Print Client to describe the Job. Examples: JobName, RequestingUserName, JobRecipient
Job Processing Elements	Job Elements supplied by the Print Client to direct the printing of the Job as a whole that the Printer copies to the Job. Examples: JobHoldUntil, JobPriority, JobCopies, JobFinishings.
Object	A entity that instantiates a data class and implements the appropriate actions.
Operator	A print client that has special rights on the printer. The Operator typically oversees the printer. The Operator is allowed to query and control the printer, jobs and documents based on site policy.
MediaSheet	A sheet of paper, or other material, used for printing
Page	A logical entity that represents the information contained on a single side of a sheet of media. Note that this is the electronic form and that multiple pages can be rendered into a single impression through N-Up printing
PDL	(Page Description Language) A language that describes the content to be printed and how it

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	will be laid out on a page (e.g. Adobe PostScript®, Hewlett Packard PCL®).
Print Client	An application or network entity that performs actions
Printer	An object that represents a printing device, set of printing devices, or a printing service and contains zero or more Jobs
Type 1 keyword	All the values are defined in the specification. Additional values require a new specification.
Type 2 keyword	An initial set of values is defined in the specification. This working group registers additional values after review. The initial versions of the specification will contain the values registered so far. After the specification is approved, this working group will register additional values after approval.
Type 3 keyword	An initial set of values is defined in the specification. Additional values are registered without working group review. The initial versions of the specification contain the values registered so far. After the specification is approved, this working group will register additional values without approval.

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3 Model Overview

229 The Printer Working Group (PWG) has defined a simplified printing model. It represents printing
230 in either a client/server print paradigm or a peer-to-peer print paradigm. The PWG model describes
231 the device as a Printer object. A Printer object may represent one or more physical Printers.
232 Another object is the Job. A Printer can contain zero or more Jobs and a Job is contained in only
233 one Printer. Each Job can contain zero or more documents. A Job can contain zero or more
234 Documents and a Document is contained in only one Printer. The PWG model contains methods
235 that act upon these objects.

236
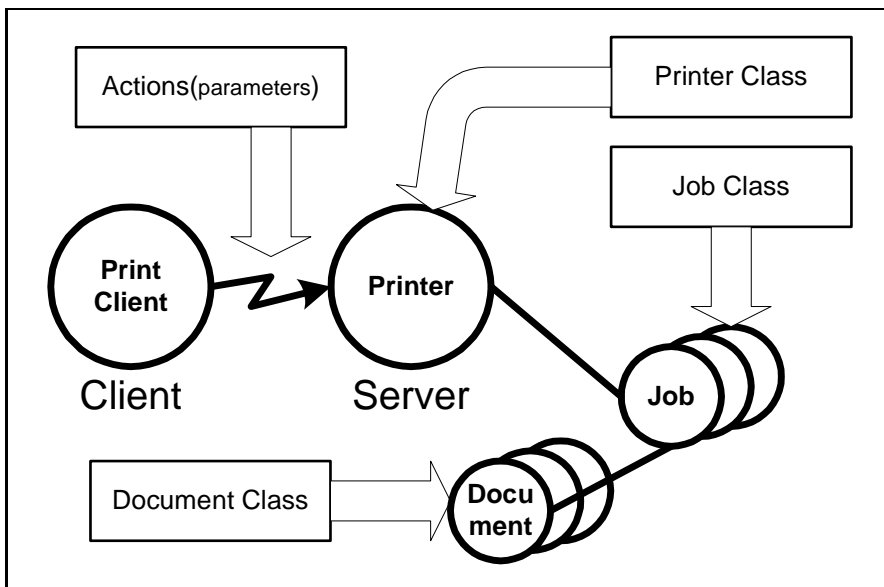
Figure 1 Model Overview

238 The objects are represented in the semantic model as data classes. The methods are represented as a
239 set of actions that act upon those data classes. The actions permit the creation and control of Jobs

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240 and documents as well as the submission of Document data. The content of a Document is
241 included in the submission or can be accessed via a URL reference. There are also actions to query
242 a Printer, Job or Document to access their Elements or to list their contained objects.

243 The model uses a number of terms with specific meaning for a printer.

4   Data Classes

245 This section describes the data classes in the PWG semantic model. Some of the classes are taken
246 from the model and semantics of IPP [rfc2911]. Figure 2 shows the data classes, their elements
247 and the containment relationship between the classes
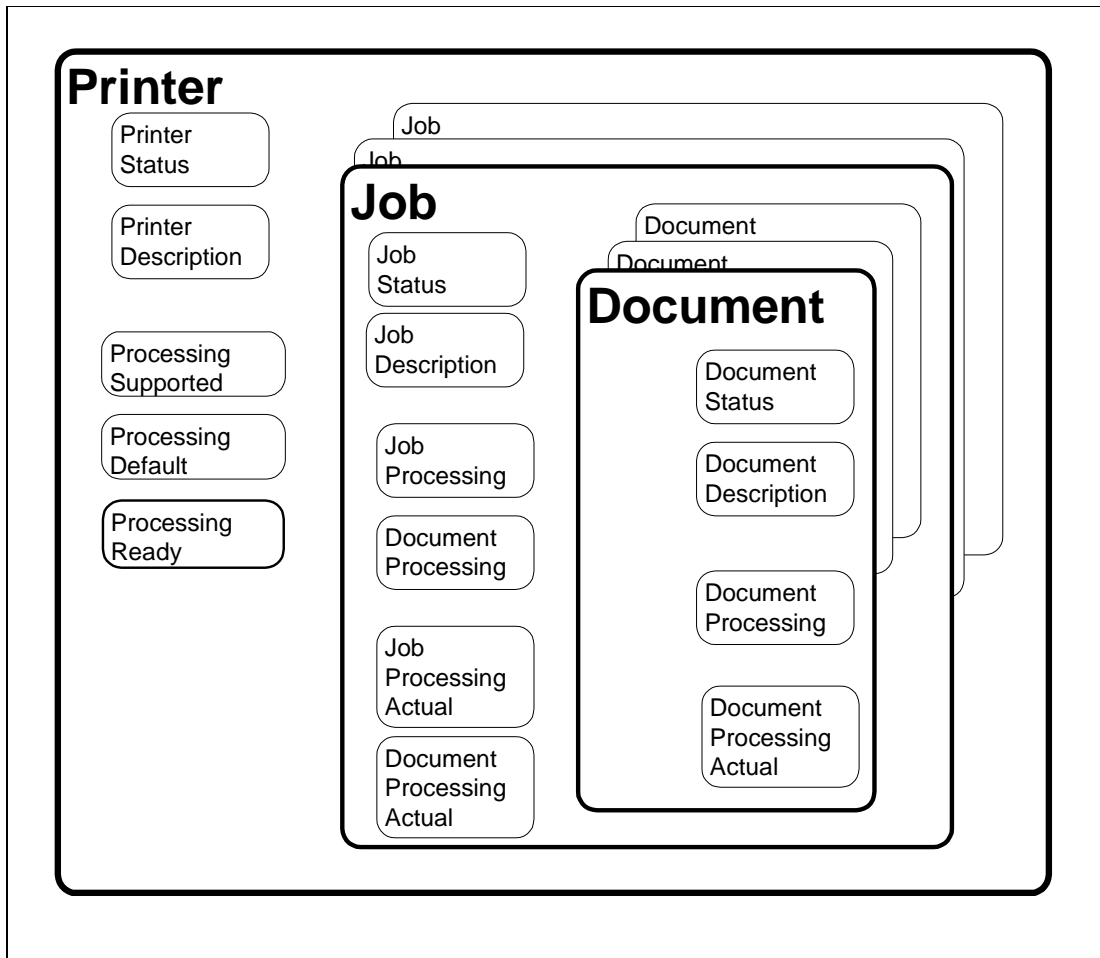
248
249

250   **Figure 2 Data Classes**

4.1 Naming of Classes, Elements and Values

The Action, Class, Element and Value keywords are shown here with mixed case for readability. For the purpose of matching, the case can be ignored. The names of clesses, elements and values must differ by more than just case. For example there can not be two values for JobStateReasons that differ only by case such as JobPrinting and jobprinting.

Specific mapping, of the Semantic Model, can mandate policy on case sensitivity. Mappings that impose case sensitivity for matching, such as XML, may simplify their implementations. Mappings that ignore case results in a server that will accept slightly malformed (i.e. case does not agree) requests. In either mapping, the keywords are semantically identical.

4.2 Printer Object Class

The Printer class is represented by a collection of elements as shown in Figure 2. The Printer Elements are presented in detail in Table 6. The printer object also contains elements that describe the valid processing element values. (See section 4.5 for processing elements) The Printer class is the container for Jobs.

4.2.1 Printer Status Elements

Figure 3 below shows the Printer Status Elements. These elements represent the state of the printer such as the number of jobs or existing error conditions. Automata change the values of the elements in this group. End Users cannot directly modify their values. The End User can affect the values of these elements through actions (e.g. PausePrinter can change the value of PrinterIsAcceptingJobs"). The semantics of the elements are summarized in Table 6.

PrinterStatus Elements

PrinterCurrentTime — PrinterStateMessage
PrinterDetailedStatusMessages — PrinterStateReasons
PrinterIsAcceptingJobs — PrinterUpTime
PrinterState — QueuedJobCount

DocumentDigitalSignatureDefault — DocumentCharsetDefault
DocumentDigitalSignatureSupported — DocumentCharsetSupported
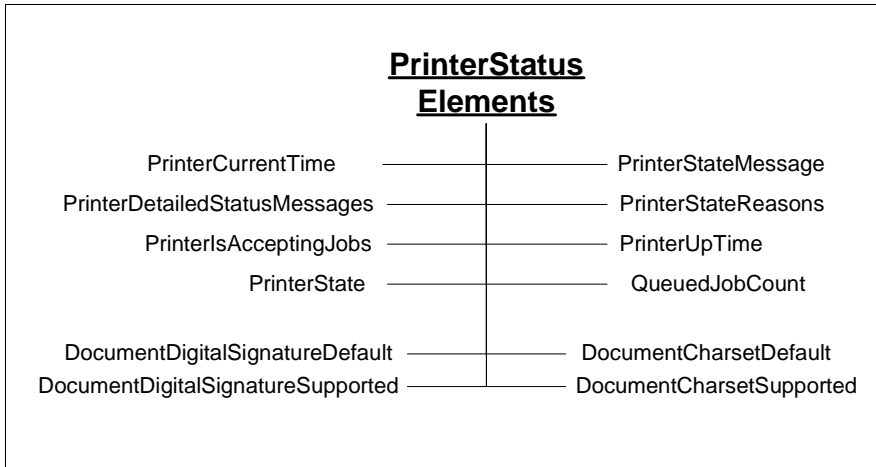
Figure 3 Printer Status Elements

The "PrinterState" element is one of the most important Printer Status elements. Figure 4 shows the values of the "PrinterState" element and the Printer life cycle as affected by actions on the Printer and job processing.
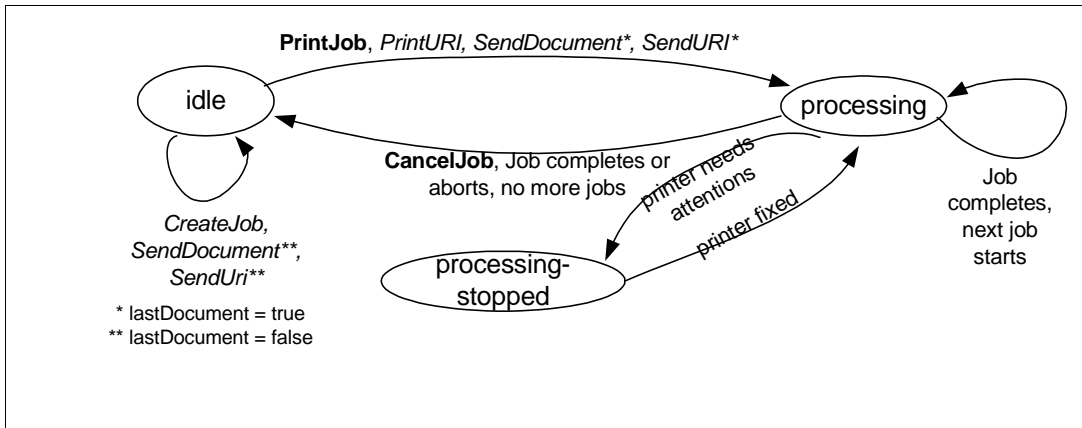
Figure 4 - The "PrinterState" element and the Printer Life Cycle

4.2.2 Printer Description Elements

Figure 5 below shows the Printer Description Elements. These elements contain information that describes the printer such as its make, where it's located and its speed. An automaton controls some of the elements in this group (e.g. "PagesPerMinute"). Others elements in this group can be modified by Operators or Administrators (e.g. "PrinterName"). The semantics of the elements are summarized in Table 6.
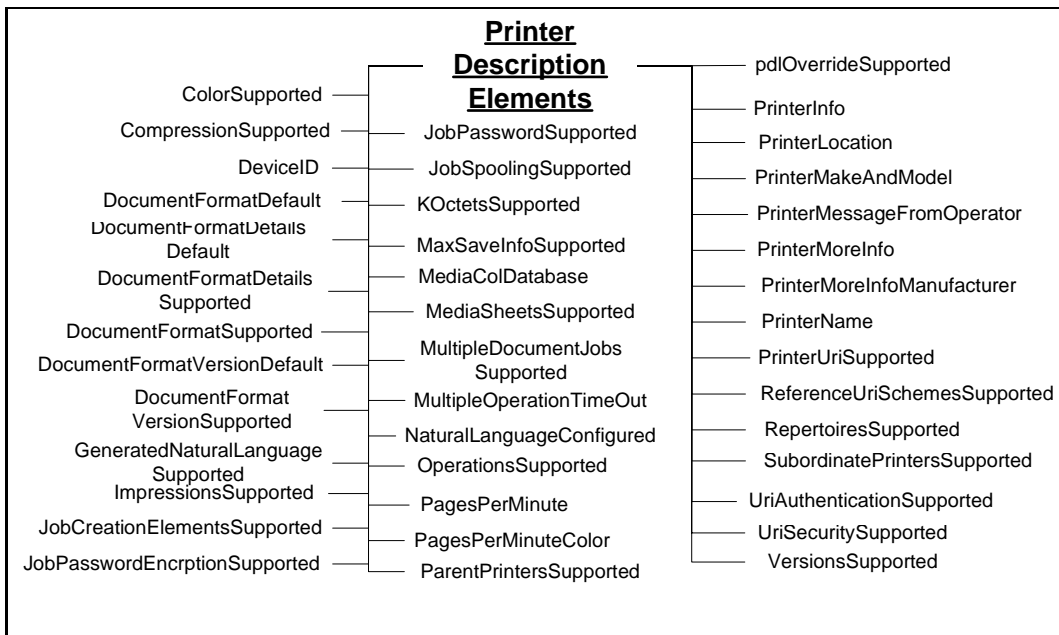
Figure 5 Printer Description Elements

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288 **4.2.3 Printer Defaults, Supported and Ready Processing Elements**

289 See section 4.5 below for the elements that may comprise these groups. Processing Elements are
290 the union of Job Processing Elements and Document Processing Elements. If a Processing element
291 (e.g. Media) is supported, the Printer must have an associated Processing Supported Element (e.g.
292 MediaSupported) and Processing Default Element (e.g. MediaDefault) Printer element. There may
293 be an associated Processing Ready Element (e.g. MediaReady) Printer element. By retrieving the
294 Printer Processing elements, a Client can determine all the Job and Document Processing elements
295 and values that may be used in creating Jobs and Documents.

296 All Processing Supported, Processing Ready and Processing Default Elements have an associated
297 Processing Element. There are Printer Description Elements with a "Supported" suffix (e.g.
298 ImpressionsSupported). While they do list the valid values for the base element (e.g. Impressions),
299 they are not Processing Supported Elements. The difference is the containing group for the base
300 element. Note that the Impressions element is a member of the Job and Document Description
301 groups.

302 **4.2.3.1 Processing Supported Elements**

303 These elements list all the currently configured valid values for each Job Processing Element and
304 Document Processing Element. Though the Printer is configured to support the feature, human
305 intervention may be required to process the job (e.g. selected paper may have to be loaded into a
306 tray).

307 The syntax for Processing Elements Supported is multi-valued when the associated processing
308 element is a string. When syntax of the processing element is an integer, the syntax of the
309 corresponding Processing Supported Element is usually RangeOfInteger that indicates the
310 minimum and maximum values supported by the Printer. However, there are some exceptions as
311 indicated in Table 1.

312 **Table 1-Integer syntax whose ProcessingElementSupported syntax isn't RangeOfInteger**

"xxx" element name	"xxx" syntax	"xxxSupported" syntax
JobPriority	Integer	Integer (Max value)
Copies	Integer	Integer (Max value)
PageRanges	RangeOfInteger (Multivalued)	Boolean (are PageRanges supported)

313 **4.2.3.2 Processing Default Elements**

314 These elements give the default value for the associated processing instruction if the Processing
315 Element of the job and document are not supplied and the instructions is not embedded in the PDL.
316 The syntax for the Processing Default Elements is the same as the corresponding Processing
317 Element. The only exception is that the PageRanges element does not have a PageRangesDefault
318 element.

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319 **4.2.3.3 Processing Ready Elements**

320 These elements give the features available without human intervention. The syntax for a
321 Processing Ready Element is the same as the corresponding Processing Element.

322 *4.3 Job Object Class*

323 The Job object class is represented by a collection of elements divided into six groups as shown in
324 Figure 2. The Job class also contains the document class

325   Job Status Elements – See Section 4.3.1
326   Job Description Elements – See section 4.3.2.
327   Job Processing Elements – See section 4.5.1
328   Document Processing Elements – See section 4.5.2
329   Job Processing Actual Elements – See section 4.6.1
330   Document Processing Actual Elements – See section 4.6.2

331 **4.3.1 Job Status Elements**

332 Figure 6 below shows the Job Status Elements. These elements reflect the status of the Job as a
333 whole. Automata primarily control the elements in this group. Clients cannot directly modify their
334 values. The Client can affect the values of these elements through actions (e.g. CancelJob can
335 change the value of JobStateReasons"). The semantics of the Job Status elements are summarized
336 in Table 4.

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```
                          Job Status
  DateTimeAtCompleted      Elements          NumberOfDucuments
  DateTimeAtCreation                          NumberOfInterveningJobs
                          JobPrinterMakeAndModel
  DateTimeAtProcessing     JobPrinterUri       OutputDeviceAssigned
  DetailedStatusMessages   JobState            PrinterUpTime
  DocumententAccessErrors  JobStateMessage     SheetsCompletedCopyNumber
                                               SheetsCompletedDocument
  ErrorsCount              JobStateReasons     Number
  ImpressionsCompleted     JobUri              TimeAtCompleted
  ImpressionsCompleted
  CurrentCopy              KOctetsProcessed    TimeAtProcessing
  JobCollationType         MedisSheetsCompleted TimeAtCreation
  JobId                    MoreInfo            WarningCount
```

340   **Figure 6 Job Status Elements**

341 **4.3.1.1 The Job Life Cycle**

342 The "JobState" element is one of the most important Job Status elements. Figure 7 shows the
343 values of the "JobState" element and the Job life cycle as affected by actions on the Job, Printer,
344 and job processing.

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347 **Figure 7 The "JobState" Job Element and the Job object life cycle**

348 **4.3.2 Job Description Elements**

349 Figure 8 below shows the Job Description Elements. These elements contain information supplied
350 by the Client at Job creation that describes the Job such as its name. The Printer may modify the
351 value of some of the elements in this group (e.g. "KOctets") if more reliable data is obtained. The
352 semantics of the Job Description elements are summarized in Table 4.

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356 **Figure 8 Job Description Elements**

4.4 Document Object Class

358 The Document object class is represented by a collection of elements divided into four groups as
359 shown in Figure 2. The Document class contains the document class

360   Document Status Elements – See Section 4.4.1.
361   Document Description Elements – See section 4.4.2.
362   Document Processing Elements – See section 4.5.2
363   Document Processing Actual Elements – See section 4.6.2

4.4.1 Document Status Elements

365 Figure 9 shows the Document Status Elements. These elements reflect the status of each
366 Document indivually. Automata primarily control the elements in this group. Clients cannot
367 directly modify their values. The Client can affect the values of these elements through actions
368 (e.g. CancelDocument can change the value of DocumentState"). The semantics of the Document
369 Status elements are summarized Table 5.
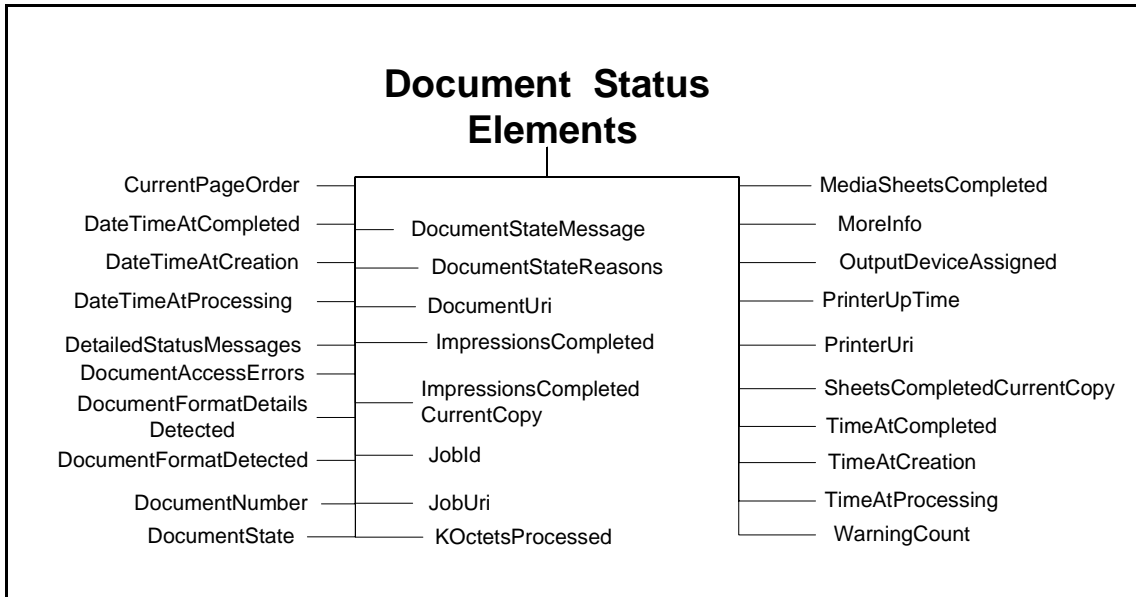
370
371

372 **Figure 9 Document Status Elements**

373 **4.4.1.1 The Document Life Cycle**

374 The "DocumentState" element is one of the most important Document Status Elements. Figure 10
375 shows the values of the "DocumentState" element and the Document life cycle as affected by
376 Actions and job processing. Documents are not active objects and their life cycle is closely tied to
377 the lifecycle of a Job. Documents basically have three states.   The first is waiting to be processed
378 by a Job (i.e., pending). The second state is from the time the Job first starts processing the
379 Document (i.e., processing) and until it reaches its terminating state. The last state for a Document
380 is its terminal state (i.e., completed, canceled, aborted)
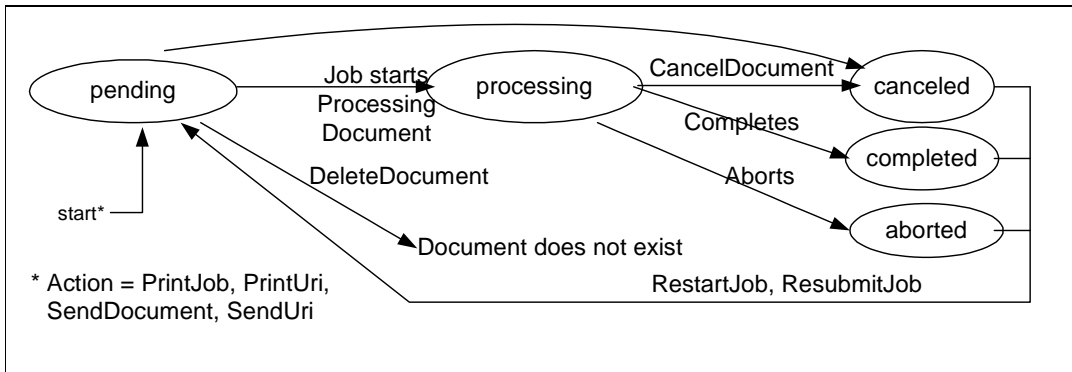
381
382

383 **Figure 10 "DocumentState" Element and Document object life Cycle**

4.4.2 Document Description Elements

Figure 11 below shows the Document Description Elements. These elements contain information supplied by the Client at Document creation that describes the document such as its size. The Printer may modify the value of some of the elements in this group (e.g. "KOctets") if more reliable data is obtained. The semantics of the Document Description elements are summarized in Table 5.

Document Description Elements

Compression	DocumentName
DocumentCharset	DocumentNaturalLanguage
DocumentDigitalSignature	Impressions
DocumentFormat	KOctets
DocumentFormatDetails	LastDocument
DocumentFormatVersion	MediaSheets
DocumentMessage	PageOrderReceived
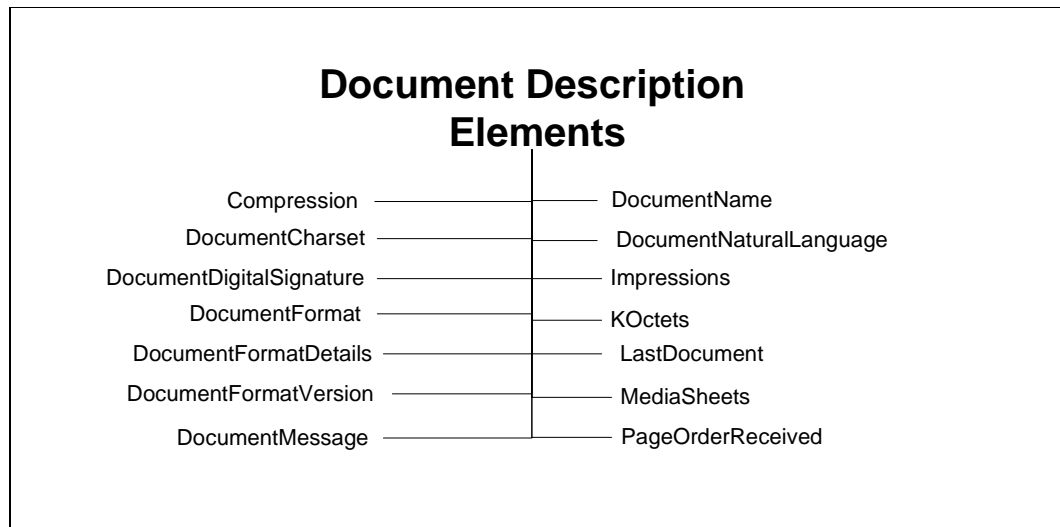
Figure 11 Document Description Elements

4.5 Processing Elements

Processing elements are instructions that the Client supplies to the Printer to be applied to jobs and documents. They indicate such things as the priority for scheduling a job or the number of copies for a document. A Printer should support each Processing Element that represents a feature of the Printer. The Processing elements are split into two groups. One groups applies to Jobs and the other to Documents.

1) Job Processing Elements are processing instructions applied the Job level. See section 4.5.1.
2) Document Processing Elements are specific to documents. See section 4.5.2.

4.5.1 Job Processing Elements

Figure 12 shows the Job Processing Elements. These elements define features supplied by the Client at Job creation. The Printer applies these elements to the Job as a whole (e.g., "JobPriority") as opposed to each document in the Job (e.g., "Media"). The semantics of the Job Processing elements are summarized in Table 3.

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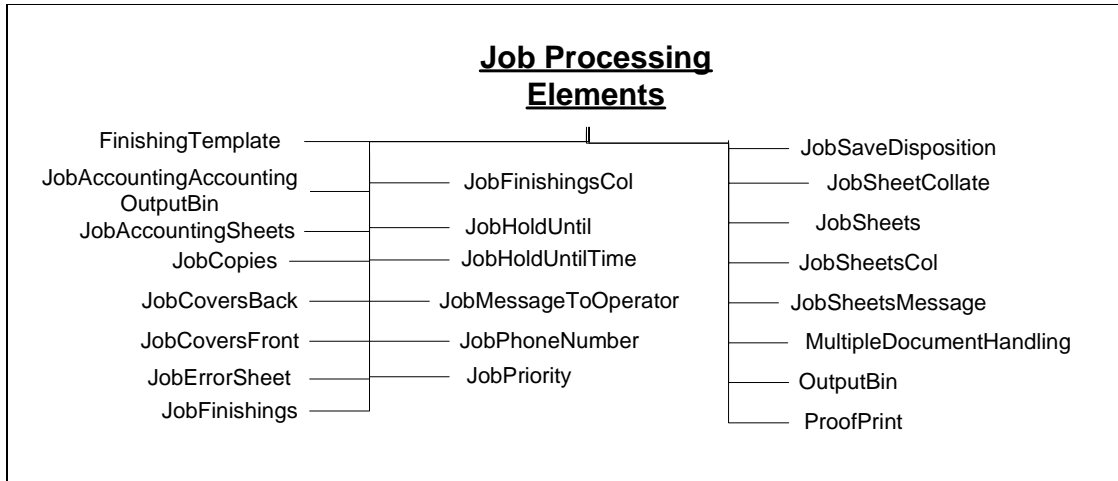
Figure 12 Job Processing Elements

4.5.2 Document Processing Elements

Figure 13 shows the Document Processing Elements. These elements define features supplied by the Client at Document creation.   The Printer applies these element to each Document individually (e.g. "copies") to create final output products. Included in these elements is how multiple physical sheets are manipulated or how the logical pages look on the output media or they determine the quality and resolution of how marks are made on a page. The semantics of the Document Processing elements are summarized in Table 3.

The Client supplies Document Processing Elements at the Job or Document level. If these elements are supplied at the Job level, the Printer applies them as the default values for all the Documents in the Job. If the elements are supplied at the Document level, the Printer applies them only to that Document.

Document Processing Elements

Copies		
CoverBack	MediaCol	SeparatorSheets
CoverFront	MediaInputTrayCheck	SheetCollate
FeedOrientation	NumberUp	Sides
Finishings	OrientationRequested	XImagePosition
FinishingsCol	Overrides	YImagePosition
FinishingsTemplate	PageDelivery	XImageShift
FontNameRequested	PagesPerSubset	YImageShift
FontSizeRequested	PageRanges	XSide1ImageShift
ForceFrontSide	PdlInitFile	YSide1ImageShift
ImpositionTemplate	PresentationDirectionNumberUp	XSide2ImageShift
InsertSheet	PrintQuality	YSide2ImageShift
Media	PrinterResolution	

422

Figure 13 Document Processing Elements

4.6 Processing Actual Elements

See section 4.5 above for the elements that may map to elements in these groups. The Processing Actual elements are optional Job and Document element that records what processing elements were used in a Job and its Documents. The mapping between the Processing element and the Processing Actual element is by taking the Processing element name and appending the suffix "Actual". The Processing Actual elements are always multivalued.

Any Processing element may have a related ProcessingActual element that shows what was applied to the Job or Document. It is not necessary for the Printer to support the Processing element for it to support the associated ProcessingActual element. By retrieving the Printer Processing Actual elements after a job completes, a Client can determine all the Job and Document Processing elements and values that were used in processing the Job and its Documents. (See [actual])

4.6.1 Job Processing Actual Elements

See section 4.5.1above for the base elements that map to elements in this group. The Job Processing Actual Element can only appear in the Job object.

4.6.2 Document Processing Actual Elements

See section 4.5.2 above for the base elements that map to elements in this group. The Document Processing Actual Element can appear in the Job and Document objects.

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5 Actions

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442 The PWG has defined a number of operations that affect Printers, Jobs and their document. Below
443 is a description of the semantics of these Actions. Naturally different protocol bindings will use
444 differing subsets of the Actions or define new ones. Another difference will be the precise
445 parameters to the Actions. Below is an abstract definition of the Actions. Action Summary

446 The Print Service Interface [PSI] has introduced additional operations or PSI specific mappings of
447 existing actions. These are included below to show a concrete mapping of the PWG Semantic
448 Model and an application specific extension of the model. Consult the PSI specification [PSI] for
449 the exact definitions.

450 This table summarizes the actions defined for the Job and Printer. The rest of section 5 provides
451 more details on the semantic of the actions.

| Job Creation and Document submission	Job and Document Control	Status and Information access	Printer Control
CreateJob	CancelCurrentJob	GetDocumentElements	ActivatePrinter
PrintJob	CancelDocument	GetDocuments	DeactivatePrinter
PrintUri	CancelJob	GetJobElements	DisablePrinter
SendDocument	DeleteDocument	GetJobs	EnablePrinter
SendURI	HoldJob	GetPrinterElements	HoldNewJobs
ValidateDocument	PromoteJob	GetPrinterSettableElement Values	PausePrinter
ValidateJob	ReleaseJob		PausePrinterAfterCurrentJob
	ReprocessJob		PurgeJobs
	RestartJob		ReleaseHeldNewJobs
	ResumeJob		RestartPrinter
	ScheduleJobAfter		ResumePrinter
	SetDocumentElements		SetPrinterElements
	SetJobElements		ShutdownPrinter
	SuspendCurrentJob		StartupPrinter

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452 **Table 2 - Summary of Actions**

453 ## *5.1 Job Creation and document submission Actions*

454 This section describes the Job Creation actions that create a Job and the ones that create add
455 Document to a Job. The Job Creation actions are: PrintJob, PrintUri, and CreateJob. The PrintJob
456 action also submits the Document. The PrintUri action submits a URI reference to the Document
457 that the Printer then retrieves when needed at a later time. The CreateJob action only creates the
458 job and the Client must issue subsequent SendDocument and SendUri actions in order to submit
459 document content or a URI reference, respectively, for a job.

460 Processing instructions and descriptive information contained in the arguments of the Job Creation
461 action are combined with Printer supplied information to create a Job instance.

462 The last action in this section is ValidateJob. This operation allows a Client to send a request with
463 all the information to create a Job, except the document content. The Printer does not create a Job
464 but informs the client whether a CreateJob, PrintJob or PrintUri with the same information would
465 have succeeded. This is useful for allowing a Client to verify the processing instructions before
466 sending a large PrintJob request.

467 A concept that is important in the PWG model is a set of instructions that can be applied to a print
468 job. Examples of these instructions include the number of copies and the media to use. These
469 instructions are referred to as Processing Elements. The Processing Elements are made up of the
470 Job Processing Elements (see section 4.5.1) and the Document Processing Elements (see section
471 4.5.2) sent in a Job or Document Creation Action.

472
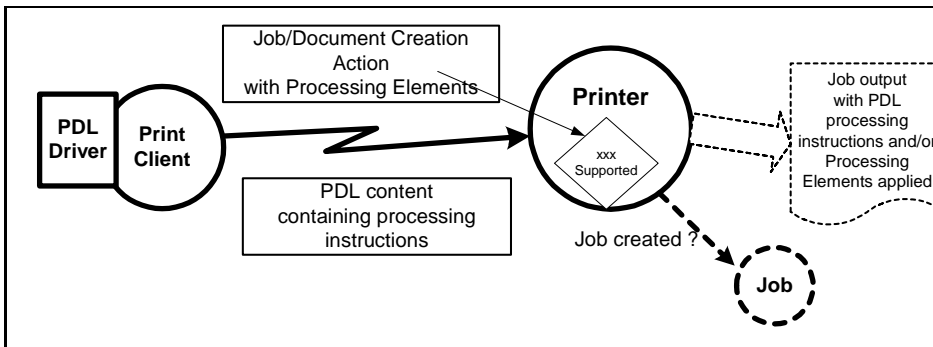
473 **Figure 14 Processing Instruction Processing**

474 In the real world, processing instructions are also contained in the document content for a job.
475 Page Description Languages (PDL) such as PostScript® and PCL® often contain processing
476 instructions. Some environments use a printer specific driver to generate the PDL stream based on
477 feature selections made through a user interface. Given that processing instructions can occur in
478 both the PDL and in an associated Job, the PWG model allows a Printer to declare its capability to
479 resolve this conflict. The Printer's element "PdlOverride" declares if an attempt will be made to
480 override the instructions in the PDL with the instructions in the Job.

481 There are a wide variety of capabilities in Printers. An instance of a Printer is to subject to changes
482 in its configured capabilities. An example would be an administrative change in the media the

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483 Printer supports or disabling two-sided printing. Clients need not check the capabilities of a Printer
484 before creating their Job Processing Elements and submitting a job. Since this is a client/server
485 paradigm, it is always possible that the capabilities could change after checking a Printer's
486 capabilities and before a Job is submitted. On the other hand, a client may use the Printer's
487 configured capabilities to create their Job Processing Elements and submit a job.

488 The PWG model allows a client to control the Printer's acceptance of a job submission based on
489 the job request and the Printer's current configured capabilities as follows. When the client
490 supplies a 'true' value for the "ElementFidelity" Job Processing element, the Printer must reject the
491 job unless the Printer supports *all* of the supplied Job Processing elements and values. When the
492 client supplies a 'false' value or omits the element, the Printer must accept the job submission and
493 ignore or substitute elements and values, respectively, that it does not support. Note that the
494 "ElementFidelity" Job Processing element covers only the creation of the Job. It is implementation
495 specific how a Printer handles processing a job when the Printer encounters unsupported
496 processing instructions in the document content.

5.1.1 CreateJob

498 ([rfc2911] §3.2.4) Similar to the PrintJob operation (see section 5.1.3), except that in the CreateJob
499 request the Client does not supply Document Data. The client supplies a single set of Job
500 Processing elements that the Printer applies to the Output Document(s) of the job. The
501 "MultipleDocumentHandling" Job Processing element controls whether the Printer produces
502 separate Output Documents or combines the Input Documents into a single Output Document (see
503 section 24).

5.1.2 CloseJob

505 ([doc-obj] section 4.3) Closes a print job that was created with a CreateJob operation (see section
506 5.1.1) and one or more SendDocument and/or SendUri operations (see sections 5.1.5 and 5.1.6)
507 This action sets the LastDocument element (see section 4.4.2) of the last Document in the Job to
508 'true'. CloseJob is semantically equivalent to a SendDocument or SendUri action with the
509 LastDocument element set to True. An explicit CloseJob is preferable to the implied closing of a
510 Job using SendDocument or SendUri and the LastDocument element set to True.

5.1.3 PrintJob

512 ([rfc2911] §3.2.1) Submit a print job with only one document and supply the document content
513 data. If the Printer accepts the job, it creates the Job object and returns a unique "JobId" element
514 for the Printer and a globally unique "JobUri" element. The Printer also sets the corresponding Job
515 elements with these values.

5.1.4 PrintUri

517 ([rfc2911] §3.2.2) Identical to the PrintJob operation (see section 5.1.3) except that a client
518 supplies a URI reference to the document data.

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519 **5.1.4.1 The "MultipleDocumentHandling" Job Processing element**

520 When a client submits a job with more than one Input Document, the
521 "MultipleDocumentHandling" Job element allows the client to specify whether the Printer is to (1)
522 produce corresponding separate Output Documents or (2) combine the Input Documents into a
523 single Output Document. For example, the 'single-document' and 'single-document-new-sheet'
524 values allow the client to staple all of the Input Documents into a single Output Document, with the
525 latter value forcing each Input Document to start on a new sheet (useful when doing two-sided
526 printing). When requesting multiple Copies, the 'separate-document-uncollated-Copies' value
527 results in the Copies of each Input Document being together in an Output set, while the 'separate-
528 document-collated-Copies' value keeps a copy of each Input Document together in an Output set.
529 For example, a job with Input Documents A, B, C and "Copies" = 2 will result in A, A, B, B, C, C
530 or A, B, C, A, B, C, respectively. If the Printer supports multiple documents per job, the Printer
531 must support this Job Processing element with at least one value.

532 ## 5.1.5 SendDocument

533 ([rfc2911] §3.3.1, [doc-obj] §3) Submits the entire Document Content for the next Input Document
534 of a job created by a previous CreateJob action (see section 5.1.1).

535 ## 5.1.6 SendUri

536 ([rfc2911] §3.3.2, [doc-obj] §3) Identical to the SendDocument operation (see section 5.1.5)
537 except that a client supplies a URI reference to the Document Content data, instead of supplying
538 the document content.

539 ## 5.1.7 ValidateDocument

540 ([doc-obj] §3) This operation is used only to verify capabilities of a Printer object against whatever
541 elements are supplied by the client in the ValidateDocument request. By using the
542 ValidateDocument action a client can validate that an identical SendDocument or SendUri would
543 be accepted.

544 ## 5.1.8 ValidateJob

545 ([rfc2911] §3.2.3) This operation is used only to verify capabilities of a Printer object against
546 whatever elements are supplied by the client in the ValidateJob request. By using the ValidateJob
547 action a client can validate that an identical PrintJob, PrintUri or CreateJob would be accepted.

548 ## 5.2 Job and Document Control Actions

549 This section describes the actions that allow a client to control a Job after it has been submitted:
550 CancelJob, HoldJob, ReleaseJob, and RestartJob.

551 ## 5.2.1 CancelCurrentJob

552 ([admin-ops] §4.2) Allows a client to cancel the current Job in the "processing" or "processing-
553 stopped" state.

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5.2.2 CancelDocument

554

555 ([doc-obj] §3) Prevents the processing of the specified Document if the Document has not yet been
556 processed. Stops the processing of any active Document in an implementation specific manner.

5.2.3 CancelJob

557

558 ([rfc2911] §3.3.3) Allows a client to cancel a Print Job from the time the Job is created up to the
559 time it is completed, canceled, or aborted.

5.2.4 DeleteDocument

560

561 ([doc-obj] §3) Removes the Document and its content from the Job.

5.2.5 HoldJob

562

563 ([rfc2911] §3.3.5) Allows a client to hold a pending Job in the Printer so that it is not eligible for
564 scheduling.

5.2.6 PromoteJob

565

566 ([admin-ops] §4.4.1) Allows a client to make the pending target job be processed after the current
567 job completes.

5.2.7 ReleaseJob

568

569 ([rfc2911] §3.3.6) Release a previously held Job so that it is again eligible for scheduling.

5.2.8 ReprocessJob

570

571 ([admin-ops] §4.1) Allows a client to re-process a copy of a job retained after processing was
572 completed. This operation is the similar to RestartJob except that a new job that is a copy of the
573 target job is created and processed.

5.2.9 RestartJob

574

575 ([rfc2911] §3.3.7) Restart a job that is retained in the Printer after processing has completed.

5.2.10   ResumeJob

576

577 ([admin-ops] §4.3.2) Resume the job at the point where it was suspended.

5.2.11   ScheduleJobAfter

578

579 ([admin-ops] §4.4.2) Request the target job be processed immediately after the specified job

5.2.12   SetDocumentElements

580

581 ([doc-obj] §3) Set the values of the supplied Document Processing and Document Description
582 elements of the indicated Document. (Was SetDocumentAttributes)

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583 **5.2.13   SetJobElements**
584 ([rfc3380] §4.2) Set the values of the supplied Job Processing, Document Processing and Job
585 Description elements of the indicated Job. (Was SetJobAttributes)

586 **5.2.14   SuspendCurrentJob**
587 ([admin-ops] §4.4.2) Stop the current job and allow other jobs to be processed instead.

588 *5.3 Status and information Actions*
589 This section describes the actions that allow a client to obtain status and elements of Jobs and
590 Printers: GetJobs, GetPrinterElements, GetJobElements and GetPrinterSupportedValues.

591 **5.3.1 GetDocumentElements**
592 ([doc-obj] §3) Returns the requested Document elements or element groups in the indicated
593 Document in the indicated Job. (Was GetDocumentAttributes)

594 **5.3.2 GetDocuments**
595 ([doc-obj] §3) Returns the requested Document elements or element groups in all Documents in
596 the indicated Job.

597 **5.3.3 GetJobElements**
598 ([rfc2911] §3.3.4) Returns the values of the requested job elements and/or element groups of a Job
599 (i.e., Job Description, Job Status, Job Processing and Document Processing). (Was
600 GetJobAttributes)

601 **5.3.4 GetJobs**
602 ([rfc2911] §3.3.4) Retrieve the list of Jobs belonging to the Printer. The Client may supply some
603 simple filters (e.g. "MyJobs, "Limit) to control which jobs will be returned. The Client may supply
604 a list of Job element and/or element group names to be returned in the response (See 5.3.3). A
605 group of Job elements will be returned for each returned Job.

606 **5.3.5 GetPrinterElements**
607 ([rfc2911] §3.2.5) Returns the values of the requested printer elements and/or element groups of a
608 Printer (i.e. Printer Status, Printer Description, Processing Supported, Processing Default,
609 Processing Ready). (Was GetPrinterAttributes)

610 **5.3.6 GetPrinterSettableElementValues**
611 ([rfc3380] §4.3) Returns the possible values of each of the requested Printer Processing and Printer
612 Description elements that may be set with the SetPrinterElements action. (Was
613 GetPrinterSupportedValues)

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5.4 Printer Control Actions

This section describes actions which allow a client to control a Printer and may require operator credentials: PausePrinter, ResumePrinter, PurgeJobs, DisablePrinter, EnablePrinter, and SetPrinterElements.

5.4.1 ActivatePrinter

([admin-ops] §3.4.2) The Printer will now start sending jobs to its Output Devices or Subordinate Printers and begin accepting all requests.

5.4.2 DeactivatePrinter

([admin-ops] §3.4.1) The Printer will now stop sending any more jobs to its Output Devices or Subordinate Printers and begin refusing all requests except ActivatePrinter, SendDocument, and SendUri requests and query requests.

5.4.3 DisablePrinter

([adm-ops] §3.1.1) Prevents the Printer from accepting any more Job Creation operations. The Printer sets the PrinterIsAcceptingJobs Printer Status element to 'false'.

5.4.4 EnablePrinter

([adm-ops] §3.1.2) Allows the Printer to start accepting Job Creation operations. The Printer sets the PrinterIsAcceptingJobs Printer Status element to 'true'.

5.4.5 HoldNewJobs

([admin-ops] §3.3.1) Complete the current 'pending' and 'processing' Jobs but do not start processing any subsequently created Jobs.

5.4.6 PausePrinter

([rfc2911] §3.2.7) Stops the Printer object from scheduling jobs. Job processing should also cease.

5.4.7 PausePrinterAfterCurrentJob

([admin-ops] §3.2.1) Stops the Printer from starting to send jobs to any of its Output Devices or Subordinate Printers.

5.4.8 PurgeJobs

([rfc2911] §3.2.9) Removes all jobs from the Printer, regardless of their state.

5.4.9 ReleaseHeldNewJobs

([admin-ops] §3.3.2) Undo the effect of HoldNewJobs and release all Jobs held as a consequence of HoldNewJobs.

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644 **5.4.10   RestartPrinter**

645 ([admin-ops] §3.5.1) This action has the effect of a software re-boot.

646 **5.4.11   ResumePrinter**

647 ([rfc2911] §3.2.8) Resume the processing and scheduling of Jobs in the Printer.

648 **5.4.12   SetPrinterElements**

649 ([rfc3380] §4.1) Set the values of the supplied Printer Processing and Printer Description elements.
650 (Was SetPrinterAttributes)

651 **5.4.13   ShutdownPrinter**

652 ([admin-ops] §3.5.2) Stop processing jobs without losing any jobs and make the Printer no longer
653 available for any Actions.

654 **5.4.14   StartupPrinter**

655 ([admin-ops] §3.5.3) Allows a hosted implementation of the Printer to be started after the host is
656 available.

657 **6 Globalization**

658 The two aspects of globalization being addressed are the character sets and natural language of the
659 human readable strings. Determining what character set is being used is left up to the protocol
660 mapping of this semantic model. The natural language being used is represented in the Printer and
661 the Job. The Printer declares the natural language it uses for all its semantic elements of type
662 string. Administrators are free to change the localization and the values in the string elements.
663 Each job creator declares the natural language for the Job and all its contained Documents. Not all
664 string elements are treated the same.

665 Any semantic element that is labeled type1, type2 or type3 keyword in the constraint column is the
666 following tables do not have any globalization issues from the Printer's point of view. They are
667 simply a sequence of octets that have a semantic meaning attached to them. The fact that the
668 sequence of octets can be interpreted as ASCII strings is unimportant. The keywords are intended
669 for consumption by automata. We leave it to Client implementations to determine how the
670 keywords will be presented to end-users.

671 There are also strings with specific formats. These formats are URI, URI Scheme, MIME, IEEE
672 1284 and DateTime. Any semantic element whose string value must adhere to one of the previous
673 formats is excluded from this discussion.

674 There are a few elements whose value is set by automata. Those values are "JobStateMessage",
675 "DocumentStateMessage" and "PrinterStateMessage". If the semantic model is mapped to a
676 protocol that allows the Client to request a language, the Printer will return these strings in the
677 requested language if possible.

678 All the remaining Printer element strings are assumed to be in the Printer's language. All the
679 remaining Job element strings are assumed to be in the language of the Job.

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680 **7 Summary of elements**

681 This section summarizes the elements for the Document, Job and Printer objects. Included in the
682 definition are the processing elements that can be applied at either the Job or Document level.   For
683 each element, the tables contain the element name, whether the element is multi-valued, its syntax,
684 constraints, a short description and a reference to the Document where the semantics of the element
685 is completely specified. The basic syntax types are "Boolean", "String" and "Integer". "Complex"
686 types are a container for elements of any type. Members are listed in the description field.
687 "RangeOfInteger" is a complex type that contains "Upperbound" and "Lowerbound" integer value
688 members. "Resolution" is a complex type that contains "CrossFeedDir" and "FeedDir" integer
689 value members and a "Units" string value member.

690 *7.1 Processing Elements (Job and Document)*

691 * Group key: J=Job Processing Elements, D=Document Processing Elements

692   Table 3 - Processing Elements (Job and Document)

Processing Element Name	Multivalued	Syntax	Constraint	Group*	Reference
	Description (values)				
Copies		Integer	1:MAX	D	[rfc2911] §4.2.5
The number of copies of the Output Document(s) to be printed. (See also JobCopies Job element)					
CoverBack		*complex*		D	[PWG5100.3] §3.1
The back cover to apply this Document. *(Includes Media/MediaCol, CoverType)*					
CoverFront		*complex*		D	[PWG5100.3] §3.1
The front cover to apply to this Document. *(Includes Media/MediaCol, CoverType)*					
CoverType		String	Type2 keyword	D	[PWG5100.3] §3.1.2
Indicates if covers are requested and which sides will contain print stream pages. (Keywords: NoCover, PrintNone, PrintFront, PrintBack, PrintBoth) (See CoverBack & CoverFront for use)					
DocumentCopies	Yes	RangeOfInteger		J	[PWG5100.4] §5.1.3
Specifies which copies of a Document to apply the override Processing elements. (See Overrides for use)					
DocumentNumbers	Yes	RangeOfInteger	1:MAX	D	[PWG5100.4] §5.1.2
Specifies the documents in a Job for override processing. (See Overrides for use)					
FeedOrientation		String	Type3 keyword	D	[prod-print2] §5.1
Specifies the media edge that is fed into the print engine from the paper tray. *(Keywords: LongEdgeFirst, ShortEdgeFirst).*					

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Processing Element Name	Multivalued	Syntax	Constraint	Group*	Reference
Description (values)					
Finishings	Yes	String	Type2 keyword	D	[rfc2911] §4.2.6 [PWG5100.1] §2
Identifies the finishings that the Printer uses for each copy of the Output Document. (See also JobFinishings Job element) *(Keywords: Bale, Bind, BindBottom, BindLeft, BindRight, BindTop, BookletMaker, Cover, EdgeStitch, EdgeStitchBottom,EdgeStitchLeft, EdgeStitchRight, EdgeStitchTop, Fold, JogOffset, None, Punch, SaddleStitch, Staple, StapleBottomLeft, StapleBottomRight, StapleDualBottom, StapleDualLeft, StapleDualRight, StapleDualTop, StapleTopLeft, StapleTopRight, Trim)*					
FinishingsCol		complex		D	[PWG5100.3] §3.2
Enables an end user to specify detailed finishing options not possible with the "Finishings" element for the Output Document. (See also JobFinishingsCol Job element) *(Includes FinishingTemplate, Stitching)*					
FinishingTemplate		String	Maxlength=1023	J,D	[PWG5100.3] §3.2.1
A string specifying some particular finishing operation. (See FinishingsCol/JobFinishingsCol for use)					
FontNameRequested		String	Maxlength=255	D	[prod-print2] §5.2
Specifies the font name if the document data is in a format that does not have inherent font information (e.g., 'text/plain'), otherwise, this element is ignored.					
FontSizeRequested		Integer	1:MAX	D	[prod-print2] §5.3
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'), otherwise, this element is ignored.					
ForceFrontSide	Yes	Integer	1:MAX	D	[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		String	Type2 keyword	D	[PWG5100.3] §3.4
Specifies imposition method for laying out finished page images onto the surface of output media. *(Keywords: None, Signature)*					
InsertAfterPageNumber		Integer	0:MAX	D	[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. (See InsertSheet for use)					
InsertCount		Integer	0:MAX	D	[PWG5100.3] §3.5.2
Specifies the number of Insert Sheet to insert. (See InsertSheet for use)					

Processing Element Name	Multivalued	Syntax	Constraint	Group*	Reference
	Description (values)				
InsertSheet	Yes	complex		D	[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. *(Includes InsertAfterPageNumber, InsertCount, Media/MediaCol)*				
JobAccountingOutputBin		String	Type3 keyword	J	[PWG5100.3] §3.8.3
	Specifies the output bin where the accounting sheet is to be placed. (See JobAccountingSheet for use) *(Keywords: Top, Middle, Bottom, Side, Left, Right, Center, Rear, FaceUp, FaceDown, Large-Capacity, MyMailbox, StackerN, MailboxN, TrayN *Note: N is replaced by a cardinal number, *Note: See [PWG5100.2 §2.1 for description of keywords)*				
JobAccountingSheets		complex		J	[PWG5100.3] §3.8
	Specifies the accounting sheet for a job. *(Includes JobAccountingSheetsType, Media/ MediaCol, JobAccountingOutputBin).*				
JobAccountingSheetsType		String	Type3 keyword	J	[PWG5100.3] §3.8.1
	Specifies the accounting sheet format for a job. (See JobAccountingSheets for use) *(Keywords: None, Standard)*				
JobCopies		Integer	1:MAX	J	[jobx] §4.1.1
	The number of copies of the Job to be printed. (See also Copies Document Processing element)				
JobCoverBack		*complex*		J	[jobx] §4.1.2
	The back cover to apply this Job. *(Includes Media/MediaCol, CoverType)*				
JobCoverFront		*complex*		J	[jobx] §4.1.3
	The front cover to apply to this Job. *(Includes Media/MediaCol, CoverType)*				
JobErrorSheet		complex		J	[PWG5100.3] §3.9
	Specifies the error sheet for a job. *(Includes JobErrorSheetType, JobErrorSheetWhen, Media/MediaCol).*				
JobErrorSheetType		String	Type3 keyword	J	[PWG5100.3] §3.9.1
	Specifies the error sheet format for a job. (See JobErrorSheet for use) *(Keywords: None, Standard)*				
JobErrorSheetWhen		String	Type2 keyword	J	[PWG5100.3] §3.9.2
	Specifies the accounting sheet format for a job. (See JobErrorSheet for use) *(Keywords: OnError, Always)*				

Processing Element Name	Multivalued	Syntax	Constraint	Group*	Reference
	Description (values)				
JobFinishings	Yes	String	Type2 keyword	J	[jobx] §4.1.4
	Identifies the finishing that the Printer uses for each job copy of the Job. (See also Finishings Document element) *(Keywords: None, Staple, Punch, Cover, Bind, SaddleStitch, EdgeStitch, StapleTopLeft, StapleBottomLeft, StapleTopRight, StapleBottomRight, EdgeStitchLeft, EdgeStitchTop, EdgeStitchRight, EdgeStitchBottom, StapleDualLeft, StapleDualTop, StapleDualRight, StapleDualBottom)*				
JobFinishingCol		complex		J	[jobx] §4.1.5
	Enables an end user to specify detailed finishing options not possible with the "JobFinishings" element. (See also FinishingsCol Document element) *(Includes FinishingTemplate, Stitching)*				
JobHoldUntil		String	Type3 keyword	J	[rfc2911] §4.2.2
	Specifies the named time period during which the Job must become a candidate for printing. (keywords: NoHold, Indefinite, DayTime, Evening, Night, Weekend, SecondShift, ThirdShift)				
JobHoldUntilTime		String	DateTime [rfc1123]	J	[prod-print2] §5.4
	Specifies the date and time after which the Job must become a candidate for printing. (example: Fri, 03 May 2002 08:49:37 GMT)				
JobMessageToOperator		String	Maxlength=1023	J	[PWG5100.3] §3.10
	Message from the end user to indicate something about the processing of this Job. (example: "Call 555-1234 before running this job")				
JobPhoneNumber		String	Maxlength=127	J	[prod-print2] §5.5
	Contains the contact telephone number for this Job.				
JobPriority		Integer	1:100	J	[rfc2911] §4.2.1
	Priority for scheduling the Job. A higher value specifies a higher priority.				
JobSaveDisposition		Complex		J	[prod-print2] §5.7
	Specifies that the Printer is to save the job as a file that can be re-printed on demand anytime in the future using the Print-URI operation (see section 5.1.4).) *(Includes SaveDisposition, SaveInfo)*				
JobSheets		String	type3 keyword	J	[rfc2911] §4.2.3 [PWG5100.3] §6.2
	Specifies which job start/end sheet(s), will be printed with a job. *(Keywords: None, Standard, JobStartSheet, JobEndSheet, JobBothSheets, FirstPrintStreamPage)*				
JobSheetsCol		complex		J	[PWG5100.3] §3.11
	Allows the client to specify the media for the JobSheet. *(Includes JobSheets, Media/MediaCol)*				
JobSheetMessage		String	Maxlength=1023	J	[PWG5100.3] §3.12
	Conveys a message that is delivered with the job.				

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Processing Element Name	Multivalued	Syntax	Constraint	Group*	Reference
Description (values)					
Media		String	type3 keyword	D	[rfc2911] §4.2.11
The name of the medium that the Printer uses for all impressions of the Job. *(Keyword examples: na_letter_8.5x11in, iso_a4_210x297mm, na_monarch_3.875x7.5in, choice_iso_a4_210x297mm_na_letter_8.5x11in. See [pwg5101.1])*					
MediaCol		complex		D	[PWG5100.3] §3.13
Enables a client end user to submit a list of media characteristics to the Printer as a way to more completely specify the media to be used than the Media element. *(Includes MediaBackCoating, MediaColor, MediaFrontCoating, MediaGrain , MediaHoleCount, MediaInfo, MediaKey, MediaMaterial, MediaOrderCount, MediaPrePrinted, MediaRecycled, MediaSize, MediaThickness, MediaTooth, MediaType, MediaWeightMetric)*					
MediaBackCoating		String	Type3 keyword	D	[PWG5100.3] §3.13.10
Indicates the pre-process coating applied to the back of the media. (See MediaCol for use) *(Keywords: None, Glossy, HighGloss, SemiGloss, Satin, Matte)*					
MediaColor		String	Type3 keyword	D	[PWG5100.3] §3.13.4
Indicates the desired color of the media being specified. (See MediaCol for use) *(Keywords: no-color, white, pink, yellow, blue, green, buff, goldenrod, red, gray, ivory, orange (See [pwg5101.1] §4))*					
MediaFrontCoating		String	Type3 keyword	D	[PWG5100.3] §3.13.10
Indicates the pre-process coating applied to the front of the media. (See MediaCol for use) *(Keywords: None, Glossy, HighGloss, SemiGloss, Satin, Matte)*					
MediaGrain		String	Type3 keyword	D	[prod-print2] §8.4.2
Indicates the grain of the media. (See MediaCol for use) *(Keywords: XDirection, YDirection)*					
MediaHoleCount		Integer	0:MAX	D	[PWG5100.3] §3.13.6
Indicates the number of pre-drilled holes in the desired media. (See MediaCol for use)					
MediaInfo		String	Maxlength=255	D	[PWG5100.3] §3.13.3
Specifies information that helps describe the media instance. Intended for human consumption. (See MediaCol for use)					
MediaInputTrayCheck		String	Type3 keyword	D	[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. *(Keywords: Top, Middle, Bottom, Side, LargeCapacity, Envelope, Main, Manual. See [RFC2911] Appendix C)*					
MediaKey		String	Type3 keyword	D	[PWG5100.3] §3.13.1
The name of the media represented as a keyword or name. Values are the same as the keyword and name values for the Media Document Processing element and represent the same media, except for media size and input tray keywords. (See MediaCol for use)					

Processing Element Name	Multivalued	Syntax	Constraint	Group*	Reference
Description (values)					
MediaMaterial		String	Type3 keyword	D	[prod-print] §8.4.3
The material of the media. (See MediaCol for use) *(Keywords: Aluminum, DryFilm, Paper, Polyester, WetFilm)*					
MediaOrderCount		Integer	1:MAX	D	[PWG5100.3] §3.13.7
Indicates the number of sheets, within an ordered sequence of sheets; after which the sequence begins to repeat. (See MediaCol for use)					
MediaPrePrinted		String	Type3 keyword	D	[PWG5100.3] §3.13.11
Indicates the pre-printed characteristics of the desired media. (See MediaCol for use) *(Keywords: Blank, PrePrinted, LetterHead)*					
MediaRecycled		String	Type3 keyword	D	[PWG5100.3] §3.13.10
Indicates the recycled characteristics of the media. (See MediaCol for use*) (Keywords: None, Standard)*					
MediaSize		Complex		D	[PWG5100.3] §3.13.8
Explicitly specifies the numerical media width and height dimensions. (See MediaCol for use) *(Includes XDimension, YDimension)*					
MediaSizeName		String	Type3 keyword	D	[doc-obj] §8.1
The medium size that the Printer uses for all impressions of the Job. (See MediaCol for use) *(Keywords: na_letter_8.5x11in. See [pwg5101.1] §5)*					
MediaThickness		Integer	1:MAX	D	[prod-print2] §8.4.4
The thickness of the media in units of one hundredth of a millimeter. This unit is equivalent to 1/2540 th of an inch. (See MediaCol for use)					
MediaTooth		String	Type3 keyword	D	[prod-print2] §8.4.1
The tooth (or roughness) of the media. (See MediaCol for use) *(Keywords: Fine, Medium, Coarse)*					
MediaType		String	Type3 keyword	D	[PWG5100.3] §3.13.2
The medium type that the Printer uses for all impressions of the Job. (See MediaCol for use) *(Keywords: stationery, transparency envelope, envelope-plain, envelope-window, continuous, continuous-long, continuous-short, tab-stock, pre-cut-tabs, full-cut-tabs, multi-part-forms, labels, multi-layer, screen, screen-paged, photographic, cardstock, other See also [pwg5101.1] §3)*					
MediaWeightMetric		Integer	0:MAX	D	[PWG5100.3] §3.13.9
Indicates the weight of the desired media rounded to the nearest whole number of grams per square meter. (See MediaCol for use)					

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Processing Element Name	Multivalued	Syntax	Constraint	Group*	Reference
	Description (values)				
MultipleDocumentHandling		String	type2 keyword	J	[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 Document Useful for application of Finishings and the placement of one or more print-stream pages into impressions and onto media sheets for multi-Document Jobs. *(Keywords: SingleDocument, SeparateDocumentUncollatedCopies, SeparateDocumentCollatedCopies, SingleDocumentNewSheet)*					
NumberUp		Integer	1:MAX	D	[rfc2911] §4.2.9
Indicates the number of Input pages that the Printer is to image on one impression.					
OrientationRequested		String	type2 keyword	D	[rfc2911] §4.2.10
The desired orientation for printed pages for document formats that don't have a built-in orientation. *(Keywords: Portrait, Landscape, ReverseLandscape, ReversePortrait)*					
OutputBin		String	Type2 keyword	J,D	[PWG5100.2] §2.1 [doc-obj] §8.1
Specifies the output bin where the job is to be delivered. *(Keywords: Bottom, Center, FaceDown, FaceUp, LargeCapacity, Left, MailboxN*, Middle, MyMailbox, Rear, Right, Side, StackerN*, Top, TrayN*. *Note: N is replaced by a cardinal number)*					
OutputDevice		String	Maxlength=255	J,D	[jobx] §4.2.1 [doc-obj] §8.1
Specifies the device where the pages of of a Job/Document will be printed.					
Overrides	Yes	complex		D	[PWG5100.4] §5.2
Provides for the overriding of processing instructions on a page basis. *(Includes Pages DocumentNumbers, DocumentCopies and any processing element that affects pages)*					
PageDelivery		String	Type2 keyword	D	[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. . See the PageOrderReceived Document Description element and the CurrentPageOrder Document Status element. *(Keywords: ReverseOrderFaceDown, ReverseOrderFaceUp, SameOrderFaceDown, SameOrderFaceUp, SystemSpecified)*					
Pages	yes	RangeOfInteger	1:MAX	D	[PWG5100.4] §5.2.4
Specifies a range of pages in the document PDL data. (See Overrides for use)					
PagesPerSubset	yes	Integer	1:MAX	D	[PWG5100.4] §5.3
Combines all of the Pages of all of the Documents into a single stream of -Pages. Then the Printer 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. Common use of subsets is a single value in the list.					

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Processing Element Name	Multivalued	Syntax	Constraint	Group*	Reference
	Description (values)				
PageRanges	yes	RangeOfInteger	1:MAX	D	[RFC2911] §4.2.7
Specifies a range of pages in the document data to be output.					
PdlInitFile	Yes	Complex		D	[prod-print2] §5.8
Controls initialization of the Printer's Page Description Language (PDL) interpreter. (Includes PdlInitFileEntry, PdlInitFileLocation. PdlInitFileName)					
PdlInitFileEntry		String	Maxlength=255	D	[prod-print2] §5.8.1.3
Specifies an entry point within the init file at which the PDL interpreter starts. (See PdlInitFile for use)					
PdlInitFileLocation		String	Maxlength=1023	D	[prod-print2] §5.8.1.1
Contains a URL that specifies the path to the directory where the initialization file for the Printer's PDL interpreter will be found. (See PdlInitFile for use)					
PdlInitFileName		String	Maxlength=255	D	[prod-print2] §5.8.1.2
Specifies the name of the PDL interpreter's initialization file within the directory specified by the PdlInitFileLocation element. (See PdlInitFile for use)					
PresentationDirectionNumberUp		String	Type2 keyword	D	[PWG5100.3] §3.17
Specifies the placement order of the page images on a Finished-Page Image with the "number-up" element. *(Keywords: TorightTobottom, TobottomToright, ToleftTobottom, TobottomToleft, TorightTotop, TotopToright, ToleftTotop)*					
PrintContent Optimize		String	type2 keyword	J,D	[jobx] §4.2.2 [doc-obj] §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.. *(Keywords: Photo, Graphics, Text, TextAndGraphics)*					
PrintQuality		String	type2 keyword	D	
The print quality that the Printer uses for the Job. *(Keywords: Draft, Normal, High)*					
PrinterResolution		resolution		D	RFC2911] §4.2.12
The resolution that Printer uses for the Job in cross-feed and feed direction in units of dpi or dpcm.					
ProofPrint		Complex		J	[prod-print2] §5.9
Specifies the elements for zero or more proof prints of the job that are to be printed prior to the printing the full run of the job. (Includes ProofPrintCopies , Media/MediaCol and any other Processing elements).					

Processing Element Name	Multivalued	Syntax	Constraint	Group*	Reference
	Description (values)				
ProofPrintCopies		Integer	0:MAX	J	[prod-print2] §5.9.1
Specifies the number of proof prints to be printed prior to the printing the full run of the job. (See ProofPrint for use)					
SaveDisposition		String	type3 keyword	J	[prod-print2] §5.7.1.1
Specifies whether the Printer must print and/or save the job. (See JobSaveDisposition for use) *(Keywords: None, PrintSave, SaveOnly)*					
SaveDocumentFormat		String	MimeMediaType [rfc2046], [rfc2048]	J	[prod-print2] §5.7.1.2.3.3
Indicates the document format in which the Printer saves the Document Data. (See DocumentFormat Document Description element) (See SaveInfo for use)					
SaveInfo	Yes	complex		J	[prod-print2] §5.7.1.2
Contains sets of elements that each tells the Printer how to create each copy of the saved job. (See JobSaveDisposition for use) *(Includes SaveLocation, SaveName, SaveDocumentFormat)*					
SaveLocation		String	Maxlength=1023	J	[prod-print2] §5.7.1.2.3.1
Specifies the path to the directory as a URI where the Printer saves the Document Data and other Job information. (See SaveInfo for use)					
SaveName		String	Maxlength= 255	J	[prod-print2] §5.7.1.2.3.2
Specifies the name of the saved job in the directory specified by the "save-location" member element. The value may be a relative path. (See SaveInfo for use)					
SeparatorSheets		complex		D	[PWG5100.3] §3.18
Specifies the separator sheets to be printed with the Document. *(Includes SeparatorSheetsType, Media/MediaCol)*					
SeparatorSheetsType		String	Type3 keyword	D	[PWG5100.3] §3.18.1
Specifies the separator sheets type. (See SeparatorSheets for use) *(Keywords: None, SlipSheets, StartSheet, EndSheet, BothSheets)*					
SheetCollate		String	Type2 keyword	D	[rfc3381] §3.1
Specifies if the media sheets of each copy of each printed document in a job are to be in sequence. *(Keywords: Uncollated, Collated)*					
Sides		String	type2 keyword	D	[rfc2911] §4.2.8
Indicates how an impression is to be placed upon the side(s) of the media. *(Keywords: OneSided, TwoSidedLongEdge, TwoSidedShortEdge, TwoSidedLongEdge)*					

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Processing Element Name	Multivalued	Syntax	Constraint	Group*	Reference
	Description (values)				
Stitching		complex		D	[PWG5100.3] §3.2.2
	Provides detailed stitching parameters. (See FinishingsCol/JobFinishingsCol for use) *(Includes StitchingReferenceEdge, StitchingOffset, StitchingLocations)*				
StitchingLocations	yes	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. (See Stitching for use)				
StitchingOffset		Integer	0:MAX	D	[PWG5100.3] §3.2.2.2
	The perpendicular distance from the reference edge to the stitching axis in hundredths of a millimeter. (See Stitching for use)				
StitchingReferenceEdge		String	type2 keyword	D	[PWG5100.3] §3.2.2.1
	Specifies the stitching reference edge of the output media. (See Stitching for use) *(Keyword: Bottom, Top, Left, Right)*				
XDimension		Integer	0:MAX	D	[PWG5100.3] §3.13.8.1
	Size of the media in hundredths of a millimeter along the bottom edge. (See MediaSize for use)				
XImagePosition		String	type2 keyword	D	[PWG5100.3] §3.19.2
	Causes the specified point of the Finished-Page Image to be positioned at a specified location. *(Keywords: None, Center, Left, Right)*				
XImageShift		Integer	MIN:MAX	D	[PWG5100.3] §3.19.3
	Causes the Finished-Page Image to be shifted in position with respect to the x-axis of the media. The unit of measure for this element is hundredths of a millimeter. The sign of the value indicates the direction of the shift.				
Xside1ImageShift		Integer	MIN:MAX	D	[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. The unit of measure for this element is hundredths of a millimeter. The sign of the value indicates the direction of the shift.				
Xside2ImageShift		Integer	MIN:MAX	D	[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. The unit of measure for this element is hundredths of a millimeter. The sign of the value indicates the direction of the shift.				
YDimension		Integer	0:MAX	D	[PWG5100.3] §3.13.8.2
	Size of the media in hundredths of a millimeter along the left edge. (See MediaSize for use)				

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Processing Element Name	Multivalued	Syntax	Constraint	Group*	Reference
Description (values)					
YImagePosition		String	type2 keyword	D	[PWG5100.3] §3.19.6
Causes the specified point of the Finished-Page Image to be positioned at a specified location. *(Keywords: None, Center, Top, Bottom)*					
YImageShift		Integer	MIN:MAX	D	[PWG5100.3] §3.19.7
Causes the Finished-Page Image to be shifted in position with respect to the y-axis of the media. The unit of measure for this element is hundredths of a millimeter. The sign of the value indicates the direction of the shift.					
Yside1ImageShift		Integer	MIN:MAX	D	[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. The unit of measure for this element is hundredths of a millimeter. The sign of the value indicates the direction of the shift.					
Yside2ImageShift		Integer	MIN:MAX	D	[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. The unit of measure for this element is hundredths of a millimeter. The sign of the value indicates the direction of the shift.					

693

7.2 Job Elements (Status and Description)

695 * Group Key: S=Status, D=Description

696 **Table 4- Job Elements (Status and Description)**

Job Element Name	Multivalued	Syntax	Constraint	Group*	Reference
Description (values)					
CompressionSupplied		String	Type2 keyword	D	[jobx] §5.2.1
Default compression algorithm used for the Documents Data. *(Keywords: None, Deflate, Gzip, Compress)*					
DateTimeAtCompleted		String	DateTime [rfc1123]	S	[rfc2911] §4.3.14.7
Indicates the date and time at which the Job completed. (example: Fri, 03 May 2002 08:49:37 GMT)					
DateTimeAtCreation		String	DateTime [rfc1123]	S	[rfc2911] §4.3.14.5
Indicates the date and time at which the Job was created . (example: Fri, 03 May 2002 08:49:37 GMT)					

Job Element Name	Multivalued	Syntax	Constraint	Group*	Reference
	Description (values)				
DateTimeAtProcessing		String	DateTime [rfc1123]	S	[rfc2911] §4.3.14.6
	Indicates the date and time at which the Job first began processing. (example: Fri, 03 May 2002 08:49:37 GMT)				
DetailedStatusMessage	Yes	String	Maxlength=1023	S	[rfc2911] §4.3.10
	Specifies additional detailed and technical information about the job. Intended for use by the system administrator or other experienced technical persons and so is not localized by the Printer. (example: "PostScript error: stack overflow") (Was JobDetailedStatusMessage)				
DocumentAccessErrors	Yes	String	Maxlength=1023	S	[rfc2911] §4.3.11
	Information about each Document access error for this job encountered by the Printer. (example: "(404) http://www.company.com/pub/fileToPrint.pdf ") (Was JobDocumentAccessErrors)				
DocumentCharsetSupplied		String	Maxlength=63	D	[jobx] §5.2.2
	The default charset of the Documents content				
DocumentDigitalSignatureSupplied		String	Type2 keyword	D	[jobx] §5.2.3
	The type of digital signature, if any, used in the Document Content. *(Keywords:* dss, none, pgp, smime, xmldsig*)*				
DocumentFormatDetailsSupplied	Yes	Complex	Complex	D	[jobx] §5.2.4
	Summarizes the default distinct contained document formats when Document contains multiple files, i.e., the Document is a container DocumentFormat, such as 'multipart/related' or 'application/zip'. For example, a container containing 100 PostScript files and 1 PCL file would have two sets of values. *(Includes DocumentSourceApplicationName, DocumentSourceApplicationVersion, DocumentSourceOsName, DocumentSourceOsVersion, DocumentFormat, DocumentFormatDeviceId, DocumentFormatVersion, DocumentNaturalLanguage).*				
DocumentFormatSupplied		String	MimeMediaType [rfc2046], [rfc2048]	D	[jobx] §5.2.5
	The default Document format (i.e., PDL) for Documents in the Job. The value "application/octet-stream" has a special meaning. This value is used to indicate that a Printer is capable of auto-sensing the format of the Document. The values "application/zip" and "multipart/related" are container formats for which DocumentContainerSummary gives additional information about the contained files. *(Examples: application/octet-stream, application/postscript, application/vnd.hp-PCL, "text/plain; charset=utf-8", application/zip, multipart/related)*				

Job Element Name	Multivalued	Syntax	Constraint	Group*	Reference
Description (values)					
DocumentFormatVersionSupplied		String	Maxlength=127	D	[jobx] §5.2.6
The default level or version of the DocumentFormat. Values are either from the prtInterpreterLangLevel [rfc1759] or a standard designation. (examples: "3" for DocumentFormat=application/postscript' "5e" for DocumentFormat=application/vnd.hp-pcl; "ISO 12639-1:1996" for TIFF/IT Profile 1)					
DocumentMessageSupplied		String	Maxlength=1023	D	[jobx] §5.2.7
A 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.					
DocumentNameSupplied		String	Maxlength=255	D	[jobx] §5.2.8
The default name for the Documents in the Job to be used in an implementation specific manner.					
DocumentNaturalLanguageSupplied		String	Maxlength=127	D	[jobx] §5.2.9
Identifies the defailt Natural Language for the Documents in the Job.					
ElementFidelity		Boolean		D	[rfc2911] §15.1, [doc-obj] §8.1.1
Allows a user to control whether or not the Printer MUST honor *all* supplied Processing elements in the Job Creation operation. For a 'true' value the Printer rejects the job submission if any of the supplied Processing element values are unsupported. For a 'false' value the Printer MUST accept the job submission and do best effort. Default = 'false' NOTE: Use "JobMandatoryElements" to explicitly specify a *subset* of the supplied elements that the Printer MUST honor. (Was IPPAttributeFidelity)					
ElementsNaturalLanguage		String	Natural language	D	[rfc2911] §4.3.20
Indicates the natural language of the elements with string syntax that were set by the End User. (Was AttributesNaturalLanguage)					
ErrorsCount		Integer	MIN:MAX	S	[jobx] §5.1.1
The total number of errors that a Printer has generated while processing and printing a Job's Document(s).					
Impressions		Integer	0:MAX	D	[rfc2911] §4.3.17.2
The total size in number of impressions in all the Job's Document(s). (Was JobImpressions)					
ImpressionsCompleted		Integer	0:MAX	S	[rfc2911] §4.3.18.2
The number of impressions completed for the Job so far. (Was JobImpressionsCompleted)					
ImpressionsCompletedCurrentCopy		Integer	0:MAX	S	[rfc3381] §4.4
The number of impressions completed for the current iteration of this Job so far.					

Job Element Name	Multivalued	Syntax	Constraint	Group*	Reference
Description (values)					
JobAccountId		String	Maxlength=255	D	[PWG5100.3] §3.6
Account associated with this Job.					
JobAccountingUserID		String	Maxlength=255	D	[PWG5100.3] §3.7
Specifies the User ID associated with the "JobAccountId".					
JobCollationType		String	Type2 keyword	S	[rfc3381] §4.1
Identifies the collation type of the Job. *(Keywords: Other, Unknown, UncollatedSheets, UncollatedDocuments, CollatedDocuments)*					
JobId		Integer	1:MAX	S	[rfc2911] §4.3.2
The Printer sets this to the ID of this Job , which is unique for the Printer.					
JobMandatoryElements	Yes	String	Type3 keyword	D	[doc-obj] §8.1
Allows a user to list which Processing elements the Printer must honor. The Printer rejects the job submission if *any* of the listed elements are unsupported or contain values that the Printer does not support. All of the remaining supplied elements are best effort. This element is ignored if ElementFidelity is supplied with a 'true' value. (See [rfc2911] §15.1) *(Keywords: None and any Processing element names. Member elements of collection elements are named as Attr.Member. For example, JobSheetsCol.Media)* NOTE: New element to align fidelity with FSG work was JobMandatoryAttributes).					
JobMessageFromOperator		String	Maxlength=127	D	[rfc2911] §4.3.16
Message to the end user indicating the reasons for any management action taken on this Job. (example: "Job canceled due to length", "Pick job up in mailbox")					
JobName		String	Maxlength=255	D	[rfc2911] §4.3.5
The Printer sets this to the client-supplied end-user friendly name for the Job, else the Printer must generate a name from other information. (example: "license agreement memo")					
JobOriginatingUserName		String	Maxlength=255	D	[rfc2911] §4.3.6
The Printer sets this element to the most authenticated printable name that it can obtain (example: "John Doe", \authDomain\John Doe")					
JobPassword		String	Maxlength=255	D	[prod-print2] §4.1
Contains a password supplied by the client encrypted according to method specified by the client in the JobPasswordEncryption element.					
JobPasswordEncryption		String	Type3 keyword	D	[prod-print2] §4.2
Specifies the type of encryption that the client is used for the supplied value of the JobPassword element. *(Keywords: None, Md2, Md4, Md5, Sha)*					

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Job Element Name	Multivalued	Syntax	Constraint	Group*	Reference
Description (values)					
JobPrinterMakeAndModel		String	Maxlength=127	S	[prod-print] §6.1
Identifies the make and model of the output device that saved this Job according to the JobSaveDisposition Job Processing element.					
JobPrinterUri		String	uri	S	[rfc2911] §4.3.3
The Printer set this to the URI of Printer that created this Job. (example: ipp://www.company.com/printer)					
JobState		String	Type1 keyword	S	[rfc2911] §4.3.7
The current state of this Job (see section 4.3.1.1). See also JobStateReasons element below. *(Keywords: Pending, Pending-Held, Processing, ProcessingStopped, Canceled, Aborted, Completed)*					
JobStateMessage		String	Maxlength=1023	S	[rfc2911] §4.3.6
Specifies information about the "JobState" and "JobStateReasons" elements in human readable text localized by the Printer according to the natural language supplied in the client's query request. (example: "Job completed successfully with warnings" for an English request)					
JobStateReasons	Yes	String	type2 keyword	S	[rfc2911] §4.3.8
Provides additional information about this Job's current state. *(Keywords: AbortedBySystem, CanceledAtDevice, CanceledByOperator, CanceledByUser, CompletedSuccessfully, CompletedWithErrors, CompletedWithWarnings, CompressionError, DigitalSignatureDidNotVerify, DigitalSignatureTypeNotSupported, DocumentAccessError, DocumentFormatError, ErrorsDetected, Incoming, Interpreting, JobDataInsufficient, JobDigitalSignatureWait, JobHoldUntilSpecified, JobPasswordWait, JobRestartable, JobResuming, JobSavedSuccessfully, JobSaveError, JobSaving, JobScheduling, JobSpooling, JobStreaming, JobSuspended, JobSuspendedByOperator, JobSuspendedBySystem, JobSuspendedByUser, JobSuspending, None, Outgoing, PrinterStopped, PrinterStoppedPartly, Printing, ProcessingToStopPoint, ProofPrintWait, Queued, QueuedForMarker, QueuedInDevice, ResourcesAreNotReady, ResourcesAreNotSupported, ServiceOffLine, Spooling, Streaming, SubmissionInterrupted, Transforming, UnsupportedCompression, UnsupportedDocumentFormat, WarningsDetected)*					
JobUri		String	uri	S	[rfc2911] §4.3.1
The Printer sets this to the URI for this Job. (example: ipp://www.company.com/printer/jobs/22) The URI is globally unique.					
KOctets		Integer	0:MAX	D	[rfc2911] §4.3.17.1
The total size of this Job's Document(s) in integral units of 1024 octets. (Was JobKOctets)					
KOctetsProcessed		Integer	0:MAX	S	[rfc2911] §4.3.18.1
the total number of octets processed in integral units of 1024 octets so far. (Was JobKOctetsProcessed)					

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Job Element Name	Multivalued	Syntax	Constraint	Group*	Reference
Description (values)					
MediaSheets		Integer	0:MAX	D	[rfc2911] §4.3.17.3
The total number of media sheets to be produced for this Job's Document(s). . (Was JobMediaSheets)					
MediaSheetsCompleted		Integer	0:MAX	S	[rfc2911] §4.3.18.3
The media-sheets completed marking and stacking so far. (Was JobMediaSheetsCompleted)					
MoreInfo		String	uri	S	[rfc2911] §4.3.4
URI used to obtain information intended for end user consumption about this specific Job/Document. (example: "http://www.company.com/printer/embededjobpage") . (Was JobMoreInfo)					
NumberOfDocuments		Integer	0:MAX	S	[rfc2911] §4.3.12
The number of Documents in this Job.					
NumberOfInterveningJobs		Integer	0:MAX	S	[rfc2911] §4.3.15
The number of jobs that are "ahead" of this Job assuming the current scheduled order.					
OutputDeviceAssigned		String	Maxlength=127	S	[rfc2911] §4.3.13
Identifies the output device to which the Printer has assigned this Job (example: "Pete's Printer")					
PrinterUpTime		Integer	1:MAX	S	[rfc2911] §4.3.14.4
The amount of time (in seconds) that the Printer has been up and running. See Printer element "PrinterUpTime" (Was JobPrinterUpTime)					
SheetsCompletedCopyNumber		Integer	0:MAX	S	[rfc3381] §4.2
Number of the copy being stacked for the current Document.					
SheetsCompletedDocumentNumber		Integer	0:MAX	S	[rfc3381] §4.3
Number of the document in this Job currently being stacked. . The Documents in a Job are numbered 1, 2, 3. A 0 value means no Document is currently being stacked.					
TimeAtCompleted		Integer	MIN:MAX	S	[rfc2911] §4.3.14.3
The time at which the Job completed in "PrinterUpTime" seconds.					
TimeAtCreation		Integer	MIN:MAX	S	[rfc2911] §4.3.14.1
The time at which the Job was created in "PrinterUpTime" seconds.					
TimeAtProcessing		Integer	MIN:MAX	S	[rfc2911] §4.3.14.2
The time at which the Job first began processing in "PrinterUpTime" seconds.					

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Job Element Name	Multivalued	Syntax	Constraint	Group*	Reference
Description (values)					
WarningsCount		Integer	MIN:MAX	S	[PWG5100.4 §6.1
The total number of warnings that a Printer has generated while processing and printing a Job's Document(s). (Was JobWarningsCount)					

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7.3 Document Elements (Status and Description)

699 * Group Key: S=Status, D=Description. Reference is given to the Job Description attribute in
700 [rfc2911] and [pwg5100.n] even when the [doc-obj] has a corresponding Document Description
701 attribute defined, since the definitions are so parallel. Reference is given to [doc-obj] when the
702 element is defined therein only.

703 **Table 5 – Document Elements (Status and Description)**

Document Element Name	Multivalued	Syntax	Constraint	Group*	Reference
Description (values)					
Compression		String	Type2 keyword	D	[rfc2911] §4.4.32
Compression algorithm used on the Document Data, if any. *(Keywords: None, Deflate, Gzip, Compress)*					
CurrentPageOrder		String	Type2 keyword	S	[PWG5100.3] §4.1
Indicates the page order of the pages in the document data. Initially set to PageOrderReceived and updated if data is transformed. *(Keywords: 1ToNOrder, NTo1Order)*					
DateTimeAtCompleted		String	DateTime [rfc1123]	S	[rfc2911] §4.3.14.7
Indicates the date and time at which this Document completed. (example: Fri, 03 May 2002 08:49:37 GMT)					
DateTimeAtCreation		String	DateTime [rfc1123]	S	[rfc2911] §4.3.14.5
Indicates the date and time at which this Document was created . (example: Fri, 03 May 2002 08:49:37 GMT)					
DateTimeAtProcessing		String	DateTime [rfc1123]	S	[rfc2911] §4.3.14.6
Indicates the date and time at which this Document first began processing. (example: Fri, 03 May 2002 08:49:37 GMT)					
DetailedStatusMessage	Yes	String	Maxlength=1023	S	[rfc2911] §4.3.10
Specifies additional detailed and technical information about this Document. Intended for use by the system administrator or other experienced technical persons. (example: "PostScript error: stack overflow") (Was JobDetailedStatusMessage)					

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Document Element Name	Multivalued	Syntax	Constraint	Group*	Reference
Description (values)					
DocumentAccessErrors	Yes	String	Maxlength=1023	S	[rfc2911] §4.3.11
Information about each Document access error for this Document encountered by the Printer. (example: "(404) http://www.company.com/pub/fileToPrint.pdf ") (Was JobDocumentAccessErrors)					
DocumentCharset		String	Maxlength=63	D	[jobx] §3.2.2 [doc-obj] §9.1.10
The charset of the Document content					
DocumentDigitalSignature		String	Type2 keyword	D	[jobx] §3.2.3 [doc-obj] §9.1.11
The type of digital signature, if any, used in the Document Content. *(Keywords:* dss, none, pgp, smime, xmldsig*)*					
DocumentFormat		String	MimeMediaType [rfc2046], [rfc2048]	D	[rfc2911] §3.2.1.1 [doc-obj] §9.1.12
The Document format (i.e., PDL) for this Document. The value "application/octet-stream" has a special meaning. This value is used to indicate that a Printer is capable of auto-sensing the format of the Document. The values "application/zip" and "multipart/related" are container formats for which DocumentContainerSummary gives additional information about the contained files. *(Examples: application/octet-stream, application/postscript, application/vnd.hp-PCL, "text/plain; charset=utf-8", application/zip, multipart/related)*					
DocumentFormatDetails	Yes	Complex		D	[jobx] §3.2.5 [doc-obj] §9.1.13
Summarizes the distinct contained document formats when the Document contains multiple files, i.e., the Document is a container DocumentFormat, such as 'multipart/related' or 'application/zip'. For example, a container containing 100 PostScript files and 1 PCL file would have two sets of values. *(Includes DocumentSourceApplicationName, DocumentSourceApplicationVersion, DocumentSourceOsName, DocumentSourceOsVersion, DocumentFormat, DocumentFormatDeviceId, DocumentFormatVersion, DocumentNaturalLanguage).*					
DocumentFormatDetails Detected	Yes	Complex		S	[doc-obj] §9.1.14
Generated by the Printer to indicate the actual document format details of the Document object. *(Includes DocumentCreatorApplicationName, DocumentCreatorApplicationVersion, DocumentCreatorOsName, DocumentCreatorOsVersion, DocumentFormat, DocumentFormatDeviceId, DocumentFormatVersion, DocumentNaturalLanguage).*					

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Document Element Name	Multivalued	Syntax	Constraint	Group*	Reference
	Description (values)				
DocumentFormatDetected		String	mimeMediaType [rfc2046], [rfc2048]	S	[doc-obj] §9.1.15
	The Printer sets this to the actual DocumentFormat that the Printer detects when auto-sensing the document format, i.e., when the DocumentFormat is omitted or supplied as 'application/octet-stream'. (example: 'application/postscript')				
DocumentFormatDeviceId		String	Maxlength=127	D	[doc-obj] §9.1.13
	Identifies the type of device for which the document was formatted, including manufacturer and model, following the IEEE 1284-2000 Device ID string. (example: MANUFACTURER:ACME Co.;COMMAND SET:PS;MODEL:LaserBeam 9;) (See DocumentFormatDetails for use)				
DocumentFormatVersion		String	Maxlength=127	D	[doc-obj] §9.1.16
	The level or version of the DocumentFormat. Values are either from the prtInterpreterLangLevel [rfc1759] or a standard designation. (examples: "3" for DocumentFormat=application/postscript' "5e" for DocumentFormat=application/vnd.hp-pcl; "ISO 12639-1:1996" for TIFF/IT Profile 1)				
DocumentFormatVersion Detected		String	Maxlength=127	S	[doc-obj] §9.1.17
	The Printer sets this to the actual DocumentFormat level or version that the Printer detects when auto-sensing the document format, i.e., when the DocumentFormat is omitted or supplied as 'application/octet-stream'. (examples: "3" for DocumentFormat=application/postscript' "5e" for DocumentFormat=application/vnd.hp-pcl; "ISO 12639-1:1996" for TIFF/IT Profile 1)				
DocumentMessage		String	Maxlength=1023	D	[doc-obj] §9.1.20
	A message from either (1) the user to the operator about the Document 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 Document.				
DocumentName		String	Maxlength=255	D	[rfc2911] §3.2.1.1
	Name for this Document to be used in an implementation specific manner.				
DocumentNaturalLanguage		String	Maxlength=127	D	[rfc2911] §3.2.1.1 [doc-obj] §9.1.22
	Identifies the primary Natural Language of this Document.				
DocumentNumber		integer		S	[PWG5100.4] §9.2, [doc-obj] §9.1.23
	The order of this document within a job starting at a base of 1.				

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Document Element Name	Multivalued	Syntax	Constraint	Group*	Reference
Description (values)					
PrinterUri		String	Maxlength=1023	S	[doc-obj] §9.1.24
The Printer sets this to the URI of the Printer, i.e., a copy of the Job's JobPrinterUri element. (example: ipp://www.company.com/printers/myprinter) (was DocumentPrinterUri)					
DocumentSourceApplicationName		String	Maxlength=255	D	[doc-obj] §9.1.13
The name of the application that created the document, without its version number. (examples: "Photoshop", "Microsoft Word") (See DocumentFormatDetails for use)					
DocumentSourceApplicationVersion		String	Maxlength=127	D	[doc-obj] §9.1.13
The version of the application that created the document, without its name. (examples: 'V3.0.', 'V6.0') (See DocumentFormatDetails for use)					
DocumentSourceOsName		String	Maxlength=40	D	[doc-obj] §9.1.13
The name of the operating system, without version number, on which the document was generated (see IANA [os-names]). (examples: 'LINUX', 'MACOS', 'NETWARE', 'WINDOWS') (See DocumentFormatDetails for use)					
DocumentSourceOsVersion		String	Maxlength=127	D	[doc-obj] §9.1.13
The version of the operating system, without its name, on which the document was generated (see IANA [os-names]. (examples: For LINUX = '1.0', 2.4'; For WINDOWS = '95', 'NT', 'NT-4', '2000', 'XP') (See DocumentFormatDetails for use)					
DocumentState		String	Type1 keyword	S	[doc-obj] §9.1.25
The current state of this Document. See also DocumentStateReasons element below. *(Keywords: Pending, Processing, Canceled, Aborted, Completed)*					
DocumentStateMessage		String	Maxlength=1023	S	[doc-obj] §9.1.26
Specifies information about the "DocumentState" and "DocumentStateReasons" elements of this Document in human readable text localized by the Printer according to the language supplied in the client's query request. *(Example: "Document completed successfully with warnings" for an English request)*					
DocumentStateReasons	Yes	String	type2 keyword	S	[doc-obj] §9.1.27
Provides additional information about this Document's current state. *(Keywords: None, AbortedBySystem, CanceledAtDevice, CanceledByOperator, CanceledByUser, CompletedSuccessfully, CompletedWithErrors, CompletedWithWarnings, CompressionError, DocumentAccessError, DocumentFormatError, Incoming, Interpreting, Outgoing, Printing, Queued, QueuedForMarker, QueuedInDevice, ResourcesAreNotReady, ResourcesAreNotSupported, Spooling, Streaming, SubmissionInterrupted, Transforming, UnsupportedCompression, UnsupportedDocumentFormat, WarningsDetected)*					

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Document Element Name	Multivalued	Syntax	Constraint	Group*	Reference
Description (values)					
DocumentUri		String	Maxlength=1023	D	[rfc2911] §3.2.2 [doc-obj] §9.1.28
Reference to the Document to be printed (Print by reference) supplied by the Client.					
ElementsCharset		String	Charset	D	[rfc2911] §4.3.19
Indicates the coded character set and encoding method of the elements in this Document object with string syntax that were set by the End User. (Was AttributesCharset)					
ElementsNaturalLanguage		String	Natural language	D	[rfc2911] §4.3.20
Indicates the natural language of the elements in this Document object with string syntax that were set by the End User. (Was AttributesNaturalLanguage)					
ErrorsCount		Integer	MIN:MAX	S	[doc-obj] §9.1.29
The total number of errors that a Printer has generated while processing and the Document.					
Impressions		Integer	0:MAX	D	[rfc2911] §4.3.17.2
The total size in number of impressions in this Document. (Was JobImpressions)					
ImpressionsCompleted		Integer	0:MAX	S	[rfc2911] §4.3.18.2
The number of impressions completed for this Document so far. (Was JobImpressionsCompleted)					
ImpressionsCompletedCurrentCopy		Integer	0:MAX	S	[rfc3381] §4.4
The number of impressions completed for the current iteration of this Document so far.					
JobId		integer	1:MAX	S	[doc-obj] §9.1.18
The Printer sets this to the ID of the Job containing this Document, i.e., a copy of the Job's JobId. The ID is unique for the Printer. (Was DocumentJobId)					
JobUri		String	Maxlength=1023	S	[doc-obj] §9.1.19
The Printer sets this to the URI for the job, i.e., a copy of the Job's JobUri. The URI is globally unique. (example: ipp://www.company.com/printers/myprinter/jobs/22) (Was DocumentJobUri)					
KOctets		Integer	0:MAX	D	[rfc2911] §4.3.17.1
The total size of this Document in integral units of 1024 octets. (Was JobKOctets)					
KOctetsProcessed		Integer	0:MAX	S	[rfc2911] §4.3.18.1
the total number of octets processed in integral units of 1024 octets so far. (Was JobKOctetsProcessed)					
LastDocument		Boolean		D	[rfc2911] §3.3.1
Has a 'true' value if this Document is the last Input Document for the Job. Default = 'false'.					

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Document Element Name	Multivalued	Syntax	Constraint	Group*	Reference
	Description (values)				
MediaSheets		Integer	0:MAX	D	[rfc2911] §4.3.17.3
The total number of media sheets to be produced for this Document. (was JobMediaSheets)					
MediaSheetsCompleted		Integer	0:MAX	S	[rfc2911] §4.3.18.3
The media-sheets completed marking and stacking for this Document so far. (Was JobMediaSheetsCompleted)					
MoreInfo		String	uri	S	[rfc2911] §4.3.4
URI used to obtain information intended for end user consumption about this specific Document. (example: "http://www.company.com/printer/embededjobpage") . (Was JobMoreInfo)					
OutputDeviceAssigned		String	Maxlength=127	S	[rfc2911] §4.3.13
Identifies the output device to which the Printer has assigned this Job (example: "Pete's Printer")					
PageOrderReceived		String	Type2 keyword	D	[PWG5100.3] §3.16
Indicates the order of pages in this Document data as supplied with the job. *(Keywords: 1ToNOrder, NTo1Order)*					
PrinterUpTime		Integer	1:MAX	S	[rfc2911] §4.3.14.4
The amount of time (in seconds) that the Printer has been up and running. (See Printer element "PrinterUpTime") (Was JobPrinterUpTime)					
SheetsCompletedCopyNumber		Integer	0:MAX	S	[rfc3381] §4.2
Number of the copy being stacked for this Document.					
TimeAtCompleted		Integer	MIN:MAX	S	[rfc2911] §4.3.14.3
The time at which this Document completed.					
TimeAtCreation		Integer	MIN:MAX	S	[rfc2911] §4.3.14.1
The time at which this Document was created in "PrinterUpTime" seconds.					
TimeAtProcessing		Integer	MIN:MAX	S	[rfc2911] §4.3.14.2
The time at which this Document first began processing.					
WarningCount		Integer	MIN:MAX	S	[PWG5100.4 §6.1
The total number of warnings that a Printer has generated while processing and printing the Document. (Was JobWarningCount)					

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7.4 Printer Elements (Status and Description)

706 * Group Key: S=Status, D=Description

707 **Table 6 - Printer Elements (Status and Description)**

Printer Element Name	Multivalued	Syntax	Constraint	Group*	reference
Description (values)					
ColorSupported		boolean		D	[rfc2911] §4.4.26
Indicates if this Printer is capable of any type of color printing at all, including highlight color.					
CompressionSupported	Yes	String	Type3 keyword	D	[rfc2911] §4.4.32
Identifies the set of Compression algorithms for Document content that this Printer supports. *(Keywords: None, Deflate, Gzip, Compress)*					
DeviceId		String	IEEE 1284	D	See Appendix 13.1
An identifier based on IEEE 1284 to identify the device that the Printer represents. Often used to load an appropriate driver on the client device. (example: "MANUFACTURER:ACME;COMMAND SET:PCL,PJL,PS,XHTML-Print+xml;MODEL:LaserBeam 9;COMMENT:example;ACTIVE COMMAND SET:PCL")					
DocumentCharsetDefault		String	Maxlength=63	S	[jobx] §7.1
The default charset for Document content					
DocumentCharsetSupported	Yes	String	Maxlength=63	S	[jobx] §7.2
The allowed charsets for Document content					
DocumentCreationElementsSupported	Yes	String	Type2 keyword	S	[doc-obj] §10.1
The Processing and Description elements that are allowed in a Document Creation operation (e.g. SendDocument, SendUri)					
DocumentDigitalSignatureDefault		String	Type2 keyword	S	[jobx] §7.3
The default type of digital signature, if any, used in the Document Content. *(Keywords:* dss, none, pgp, smime, xmldsig*)*					
DocumentDigitalSignatureSupported		String	Type2 keyword	S	[jobx] §7.4
The allowed types of digital signature, if any, for the Document Content. *(Keywords:* dss, none, pgp, smime, xmldsig*)*					
DocumentFormatDefault		String	MimeMediaType [rfc2046], [rfc2048]	D	[rfc2911] §4.4.21
The document format (i.e. PDL) that this Printer has been configured to assume if the client does not specify a document format in any of the actions that supply document content for a Job. The value "application/octet-stream" has a special meaning. This value is used to indicate that a Printer is capable of auto-sensing the format of the document. (examples: application/octet-stream, application/postscript, application/vnd.hp-PCL, "text/plain; charset=utf-8")					

Printer Element Name	Multivalued	Syntax	Constraint	Group*	reference
Description (values)					
DocumentFormatDetailsDefault		Complex	Complex	D	[jobx] §7.5
The default distinct contained document formats when Document contains multiple files, i.e., the Document is a container DocumentFormat, such as 'multipart/related' or 'application/zip'. (Includes DocumentSourceApplicationName, DocumentSourceApplicationVersion, DocumentSourceOsName, DocumentSourceOsVersion, DocumentFormat, DocumentFormatDeviceId, DocumentFormatVersion, DocumentNaturalLanguage).					
DocumentFormatDetailsSupported	YES	String	Type2 keyword	D	[jobx] §7.6
Lists the type2 keyword names of the member attributes of DocumentFormatDetails that the Printer supports. *(Examples:* DocumentCreatorApplicationName*, DocumentCreatorApplicationVersion, DocumentCreatorOsName, DocumentCreatorOsVersion, DocumentFormat, DocumentFormatDeviceId, DocumentFormatVersion, DocumentNaturalLanguage).*					
DocumentFormatSupported	YES	String	MimeMediaType [rfc2046], [rfc2048]	D	[rfc2911] §4.4.22
Identifies both the Document and Image formats supported by this Printer. Specifies the set of Document formats that the Printer supports. (examples: application/octet-stream, application/postscript, application/vnd.hp-PCL, "text/plain; charset=utf-8"). Also specifies the set of Image formats that the Printer supports. (examples: 'image/jpeg' which is a registered MIME Media Type with IANA.					
DocumentFormatVersionDefault		String	Maxlength=127	D	jobx] §7.7
The default level or version of the DocumentFormats that the Printer will use if not supplied by the Client in DocumentFormatDetails. (examples: "3" for DocumentFormat=application/postscript' "5e" for DocumentFormat=application/vnd.hp-pcl; "ISO 12639-1:1996" for TIFF/IT Profile 1)					
DocumentFormatVersionSupported	YES	String	Maxlength=127	D	jobx] §7.8
The level or version of the DocumentFormats that the Printer will accept if supplied by the Client in DocumentFormatDetails. (examples: "3" for DocumentFormat=application/postscript' "5e" for DocumentFormat=application/vnd.hp-pcl; "ISO 12639-1:1996" for TIFF/IT Profile 1)					
GeneratedNaturalLanguageSupported	YES	String	Natural Language	D	[rfc2911] §4.4.20
Identifies the natural language(s) that the Printer supports in returned values of messages generated by the Printer, that is, the JobStateMessage, DocumentStateMessage, and PrinterStateMessage elements.					
ImpressionsSupported		RangeOfInteger	0:MAX	D	[rfc2911] §4.4.34
Specifies the upper and lower bounds for the number of impressions allowed per job. (Was JobImpressionsSupported)					

Printer Element Name	Multivalued	Syntax	Constraint	Group*	reference
Description (values)					
JobCreationElementsSupported	YES	String	Type2 keyword	D	[prod-print1] §7.1
Identifies the set of Job Processing and Job Description elements (but not member elements) that this Printer will accept in a JobCreation action (Was JobCreationAttributesSupported)					
JobPasswordEncryptionSupported	Yes	String	type3 keyword	D	[prod-print1] §7.3
Identifies which encryption methods this Printer supports as values of the JobPasswordEncryption Job Description element for Secure Print. *(Keywords: None, Md2, Md4, Md5, Sha)*					
JobPasswordSupported		Integer	0:MAX	D	[prod-print1] §7.2
Indicates the maximum length that this Printer will accept for the unencrypted password which the client will encrypt as the value of the JobPassword Description Element.					
JobSpoolingSupported		String	type2 keyword	D	[prod-print1] §7.4
Indicates whether or not the Printer spools Jobs before interpreting the document data (RIPing). *(Keywords: Spool, Stream, Automatic)*					
KOctetsSupported		RangeOfInteger	0:MAX	D	[rfc2911] §4.4.33
Specifies the allowable upper and lower bounds of the total size per Job in integral units of 1024 octets that this Printer will accept. (Was JobKOctetsSupported)					
MaxSaveInfoSupported		Integer	1:MAX	D	[prod-print1] §7.5
Identifies the maximum number of SaveInfo member element collections that this Printer can accept in a job request.					
MediaColDatabase	Yes	Complex		D	[prod-print1] §7.6
Identifies all of the Media supported by this Printer using a collection value for each which identifies the media characteristics. This element is not returned when 'all' is requested. *(Includes any of the MediaCol member elements)*					
MediaSheetsSupported		RangeOfInteger	0:MAX	D	[rfc2911] §4.4.35
Specifies the upper and lower bounds for the number of media sheets allowed per job by this Printer. (Was JobMediaSheetsSupported)					
MultipleDocumentJobsSupported		boolean		D	[rfc2911] §4.4.16
Indicates whether this Printer supports more than one Document per job, i.e., more than one SendDocument and/or SendUri request per job. A multi-Document per job Printer must implement this element and have a value of 'true'. A single Document per job Printer may either not support this element or support it with a value of 'false'.					

Printer Element Name	Multivalued	Syntax	Constraint	Group*	reference	Formatted Table
Description (values)						
MultipleOperationTimeOut		Integer	1:MAX	D	[rfc2911] §4.4.31	
Identifies the minimum time (in seconds) that this multi-Document per job Printer will wait between actions on an open job before timing out. The actions can add Document to the open Job or close the Job. Timeouts are handled in an implementation specific manner. Multi-Document per job Printers must implement this element. The recommended value is greater than 60 and less than 240.						
NaturalLanguageConfigured		String	Natural language	D	[rfc2911] §4.4.19	
Indicates the natural language of the elements with string syntax that were set by the Administrator or Manufacturer.						
OperationsSupported	Yes	String	type2 keyword	D	[rfc2911] §4.4.15	
The set of supported actions for the Printer and Job. (Keywords: PrintJob, PrintUri, CreateJob, SendDocument, SendURI, ValidateJob, ValidateDocument, CancelJob, HoldJob, ReleaseJob, RestartJob, SetJobElements, SetDocumentElements, CancelDocument, DeleteDocument, GetJobs, GetPrinterElements, GetJobElements, GetDocuments, GetDocumentElements, GetPrinterSupportedValues, PausePrinter, ResumePrinter, PurgeJobs, DisablePrinter, EnablePrinter, SetPrinterElements).						
PagesPerMinute		Integer	0:MAX	D	[rfc2911] §4.4.36	
Specifies the nominal number of pages per minute which may be generated by this Printer.						
PagesPerMinuteColor		Integer	0:MAX	D	[rfc2911] §4.4.37	
Specifies the nominal number of pages per minute which may be generated by this Printer when printing color.						
ParentPrintersSupported	Yes	String	Uri	D	[admin-ops] §7.2	
Contains the URI of the non-leaf Printer for which this Printer is the immediate subordinate.						
PdlOverrideSupported		String	type2 keyword	D	[rfc2911] §4.4.28	
Expresses the ability of this Printer to (1) guaranteed, (2) attempt to, or (3) not attempt to override a Document's processing instructions with Job Processing Elements. *(Keywords: Attempted, Guaranteed, NotAttempted)*						
PrinterCurrentTime		String	DateTime [rfc1123]	S	[rfc2911] §4.4.30	
Indicates the current date and time. (example: Fri, 03 May 2002 08:49:37 GMT)						
PrinterDetailedStatusMessages	Yes	String	Maxlength=1023	S	[prod-print2] §7.7	
Specifies additional detailed and technical information about this Printer for the technical staff.						

Printer Element Name	Multivalued	Syntax	Constraint	Group*	reference
Description (values)					
PrinterDriverInstaller		String	Uri	D	[rfc2911] §4.4.8
Intended for consumption by automata to locate the driver installer for this Printer object. (example: "http://www.company.com/printer/installerProgram") Note: This element has not been used by any known implementation and is therefore deprecated.					
PrinterInfo		String	Maxlength=127	D	[rfc2911] §4.4.6
Descriptive information about this Printer object.(example: "Out of courtesy for others, please print only small (1-5 page) jobs at this printer")					
PrinterIsAcceptingJobs		Boolean		S	[rfc2911] §4.4.23
Indicates whether this Printer is currently able to accept jobs.					
PrinterLocation		String	Maxlength=127	D	[rfc2911] §4.4.5
Identifies the location of the device that this Printer represents. *(Example: Pete's Office)*					
PrinterMakeAndModel		String	Maxlength=127	D	[rfc2911] §4.4.9
Identifies the make and model of the device that this Printer object represents. *(Example: "Xerox Phaser 7700", "HP LaserJet 1000", "Lexmark Optra Color 45")*					
PrinterMessageFromOperator		String	Maxlength=127	D	[rfc2911] §4.4.25
End user information for this Printer. *(Example: "printer unavailable until 1pm due to preventive maintenance")*					
PrinterMoreInfo		String	uri	D	[rfc2911] §4.4.7
URI used to obtain information intended for end user consumption about this specific Printer. *(Example: "http://www.company.com/printer/embeddedwebpage")*					
PrinterMoreInfoManufacturer		String	uri	D	[rfc2911] §4.4.10
URI used to obtain more information for end user consumption about this type of device that this Printer represents. *(Example: "http://www.xerox.com/go/xrx/template/012.jsp?Xcntry=USA&Xlang=en_US&prodID=7700", "http://www.lexmark.com/US/products/overview/0,1224,MjQ5fDE=,00.html")*					
PrinterName		String	Maxlength=127	D	[rfc2911] §4.4.4
The end-user friendly name of this Printer object. (example: "Pete's Printer")					
PrinterState		String	type1 keyword	S	[rfc2911] §4.4.11
Identifies the current state of the device(s) that this Printer represents (see Figure 4). (See "PrinterStateReasons" below) *(Keywords: Idle, Processing, Stopped)*					

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Printer Element Name	Multivalued	Syntax	Constraint	Group*	reference
Description (values)					
PrinterStateMessage		String	Maxlength=1023	S	[rfc2911] §4.4.13
Information about the "printer- state" and "printer-state-reasons" elements in human readable text localized by the Printer according to the natural language supplied in the client's query request. *(Example: "Printer stopped due to paper jam" for an English request)*					
PrinterStateReasons	Yes	String	type2 keyword	S	[rfc2911] §4.4.12
Augments the "printer-state" element to give more detailed information about this Printer's state. Each keyword value may have a suffix to indicate its level of severity. The three suffixes (levels) are: "Report" (least severe), "Warning", and "Error" (most severe). Keywords without suffixes are assumed to be "Error" (most severe). See reference for semantics of defined keywords. *(Keywords: Other, None, ConnectingToDevice, CoverOpen, Deactivated, DeveloperEmpty, DeveloperLow, DoorOpen, FuserOverTemp, FuserUnderTemp, HoldNewJobs, InputTrayMissing, InterlockOpen, InterpreterResourceUnavailable, MarkerSupplyEmpty, MarkerSupplyLow, MarkerWasteAlmostFull, MarkerWasteFull, MediaEmpty, MediaJam, MediaLow, MediaNeeded, MovingToPaused, OpcLifeOver, OpcNearEol, OutputAreaAlmostFull, OutputAreaFull, OutputTrayMissing, Paused, Shutdown, SpoolAreaFull, StoppedPartly, Stopping, TimedOut, TonerEmpty, TonerLow)*					
PrinterUpTime		integer	1:MAX	S	[rfc2911] §4.4.29
The amount of time (in seconds) that this Printer has been up and running					
PrinterUriSupported	Yes	String	uri	D	[rfc2911] §4.4.1
Contains at least one URI for this Printer object. The PrinterUriSupported, UriAuthenticationSupported and the UriSecuritySupported are parallel elements. Each of these elements must have the same cardinality. The "i"th value of each of these elements describes the URI for the printer, the authentication mechanism used and the security method used. *(Example: ipp://www.company.com/printer)*					
QueuedJobCount		integer	0:MAX	S	[rfc2911] §4.4.24
The number of jobs that this Printer has accepted but has not yet completed.					
ReferenceUriSchemesSupported	Yes	String	UriScheme	D	[rfc2911] §4.4.27
Which URI schemes are supported by this Printer to retrieve Document This element must be supported if the Printer is capable of print by reference. *(Example: ftp, http)*					
RepertoiresSupported	Yes	String	Repertoire	D	[Repertoire] §3.1
Indicates the subsets of characters that are actually present in the Printer. *(Example: IANA: iso-8859-1, Unicode: Latin 1, Vendor: Oak Floral)*					
SubordinatePrintersSupported	Yes	String	Uri	D	[admin-ops] §7.1
Contains the URI of the immediate subordinate Printers associated with this Printer.					

Printer Element Name	Multivalued	Syntax	Constraint	Group*	reference
	Description (values)				
UriAuthenticationSupported	Yes	String	type2 keyword	D	[rfc2911] §4.4.2
	The Client authentication mechanism that this Printer object uses to identify the user. (See PrinterUriSupported for additional information) *(Keywords: None, Requesting-UserName, Basic, Digest, Certificate)*				
UriSecuritySupported	Yes	String	type2 keyword	D	[rfc2911] §4.4.3
	Identifies the security mechanisms used for accessing this Printer object. (See PrinterUriSupported for additional information) *(Keywords: None, Ssl3, Tls)*				
VersionsSupported	Yes	String	type2 keyword	D	[rfc2911] §4.4.14
	The versions of the semantics that this Printer supports. *(Keywords: 1.0, 1.1, etc.).*				
WhichJobsSupported	Yes	String	type2 keyword	D	[prod-print2] §7.8
	Contains the set of values that this Printer supports for the WhichJobs operation element that the client may supply in the Get-Jobs operation as a job filter. *(Keywords: Aborted, All, Canceled, Completed, NotCompleted, Pending, PendingHeld, Processing, ProcessingStopped)*				

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8 Status Strings

710 This Appendix lists the status strings that the Printer returns in each action response.

711 **Table 7 Status strings indicating some degree of success**

Status String	Actions where status may occur
Reference Description of status	
SuccessfulOk	Any
Rfc2911 Action succeeded and no requested element were substituted or ignored.	
SuccessfulOkConflictingElements	CreateJob, PrintJob, PrintUri, SendDocument, SendUri, ValidateDocument, ValidateJob
Action succeeded but some elements were conflicting and have been substituted or ignored.	
SuccessfulOkIgnoredOrSubstitutedElements	CreateJob, PrintJob, PrintUri, SendDocument, SendUri, ValidateDocument, ValidateJob
Action succeeded but some unsupported elements were ignored or substituted.	

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713 **Table 8 Status strings indicating error on the part of the Client**

Status String	Actions where status may occur
Description of status	
ClientErrorBadRequest	Any
Malformed syntax or constraint exceeded.	

Status String	Actions where status may occur
Description of status	
ClientErrorCharsetNotSupported	Any
The charset is not supported.	
ClientErrorCompressionError	PrintJob, PrintUri, SendDocument, SendUri
An error occurred when uncompressing the Document Content.	
ClientErrorCompressionNotSupported	PrintJob, PrintUri, SendDocument, SendUri
The compression of the Document Content is not supported.	
ClientErrorConflictingElements	CreateJob, PrintJob, PrintUri, SendDocument, SendUri, SetDocumentElements, SetJobElements, SetPrinterElements, ValidateDocument, ValidateJob
Some supplied elements are conflicting. The Printer must return them in the Unsupported Elements group.	
ClientErrorDocumentAccessError	PrintUri, SendUri
An error occurred when the Printer attempted to access the Document Content through the URI supplied.	
ClientErrorDocumentFormatError	PrintJob, PrintUri, SendDocument, SendUri
An error occurred when interpreting the Document Content.	
ClientErrorDocumentFormatNotSupported	CreateJob, PrintJob, SendDocument, SendUri, ValidateDocument, ValidateJob
The document format is not supported.	
ClientErrorElementsNotSettable	SetDocumentElements, SetJobElements, SetPrinterElements
The supplied element(s) are not settable	
ClientErrorElementsOrValuesNotSupported	CreateJob, PrintJob, PrintUri, SendDocument, SendUri, SetDocumentElements, SetJobElements, SetPrinterElements, ValidateDocument, ValidateJob
The supplied element(s) or Values are not supported	
ClientErrorForbidden	Any
The Printer understood the request, but is refusing to fulfill it for authentication and/or authorization reasons. The client should not try again even with credentials.	
ClientErrorGone	Any
The target object is no longer available.	
ClientErrorJobNotAcceptingAdditionalDocuments	SendDocument, SendUri
Client attempted to add a Document to a Job after indicating the last document was sent	
ClientErrorNotAuthenticated	Any
The request requires user authentication. The client may try again with suitable authentication.	
ClientErrorNotAuthorized	Any

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Status String		Actions where status may occur
	Description of status	
	The requester is not authorized to perform the request. The Client should not try again.	
ClientErrorNotFound		ActivatePrinter, CancelDocument, CancelJob, DeactivatePrinter, DeleteDocument, DisablePrinter, EnablePrinter, GetDocumentElements, GetDocuments, GetJobElements, GetJobs, GetPrinterElements, GetPrinterSettableElementValues, HoldJob, PromoteJob, ReleaseJob, ReprocessJob, RestartJob, ResumeJob, SendDocument, SendUri, SetDocumentElements, SetJobElements
	The target object was not found.	
ClientErrorNotPossible		
	The action cannot be performed, because of the state of the target object.	
ClientErrorRequestEntityTooLarge		Any
	The request and/or the Document Content is too large.	
ClientErrorRequestValueTooLong		Any
	An element value in the request is longer than the Printer supports.	
ClientErrorTimeout		SendDocument, SendUri
	The client did not produce a subsequent request within the time that the Printer was prepared to wait.	
ClientErrorUnsupportedInterface		
	PSI specific error indicating a request for information for a non-existent interface	
ClientErrorUriNotResolvable		
	PSI specific error indicating inability of PSI Server to communicate with a Target Device	
ClientErrorUriSchemeNotSupported		PrintUri, SendUri
	The URI scheme is not supported.	
ClientInvalidUri		
	PSI specific error indicating the URI provided is not well formed	

714

715   **Table 9 Status strings indicating error on the part of the Printer**

Status String		Actions where status may occur
Reference	Description of status	
ServerErrorBusy		Any
	A temporary error indicating that the Printer is too busy processing jobs and/or other requests. A Client should try again later.	
ServerErrorDeviceError		CreateJob, PrintJob, PrintUri, SendDocument, SendUri

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Status String	Actions where status may occur
Reference	Description of status
	The Printer encountered a device error that causes it to be unable to accept a new request. For example, a paper jam for a Printer that doesn't spool and so cannot accept a new job submission until the jam is fixed.
ServerErrorInternalError	Any
	An unexpected internal error occurred.
ServerErrorJobCanceled	CancelDocument, CancelJob, DeleteDocument, SendDocument, SendUri, SetDocumentElements, SetJobElements
	The job has been canceled by an operator or aborted by the system. For example, while the Client is transmitting the Document Content to the Printer.
ServerErrorMultipleDocumentJobsNotSupported	SendDocument, SendUri
	The Printer doesn't support multiple document jobs and the client attempted to supply a second SendDocument or SendUri request. The Printer's "MultipleDocumentJobsSupported" Printer Description element is 'false'.
ServerErrorNotAcceptingJobs	CreateJob, PrintJob, PrintUri
	The Printer is not currently accepting jobs. Its "PrinterIsAcceptingJobs" Printer Description element is 'false'.
ServerErrorNotCancelableAtTargetDevice	CancelJob, CancelJob
	PSI specific error indicating the Print Service is unable to direct the Target Device to cancel the Job.
ServerErrorOperationNotSupported	Any unsupported action
	The Printer does not support the requested action.
ServerErrorPrinterIsDeactivated	Any except Activate-Printer
	`The Printer has been deactivated using the Deactivate-Printer` operation and is only accepting the Activate-Printer
ServerErrorServiceUnavailable	Any
	The Printer is unable to service the request at this time due to overloading or maintenance. The client should try again later as per the "message" Operation element.
ServerErrorTargetDeviceNotReachable	CreateJob
	PSI specific error indicating the Print Service is unable to communicate with the specified Target Device.
ServerErrorTargetDeviceUrlNotSupported	CreateJob
	PSI specific error indicating the Print Service does not support the specified Target Device.
ServerErrorTemporaryError	Any
	A temporary error such as a buffer full write error, a memory overflow, or a disk full condition.
ServerErrorTooManyDocuments	SendDocument, SendUri
	An attempt to create a Document in a Job failed because it exceeded the Printer's capacity for this Job at this time..
ServerErrorTooManyJobs	PrintJob, PrintUri, CreateJob
	An attempt to create a Job in a Job failed because it exceeded the Printer's

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Status String		Actions where status may occur
Reference	Description of status	
	capacity at this time..	
ServerErrorVersionNotSupported		Any
	The Printer doesn't support the requested major version of the protocol and returns the closest version that it does support.	

716

717

9 Semantic Elements to be added

719 • Color and Imaging (awaiting reference from CIP4/PWG)

10 Change Log

721 8/20/03   PJZ   cross checked tables and figures

722 8/15/03   PJZ   Synched specification with [jobx], [override] and [doc-obj].

723 6/30/03   PJZ   Added Overrides

724 4/21/03   PJZ   Removed Tumble value from Sides

725 3/31/03   PJZ   Cleaned up Naming of Classes, Elements and Values (§ 4.1) and IPP
726   Mapping (§14). Fixed case of element values in tables

727 3/26/03   PJZ   Updated with changes from Document Object Specification

728 3/21/03   PJZ   Added Character Repertoire

729 3/17/03   PJZ   Removed PSI specific actions, corrected list of excluded elements in
730   appendix B

731 3/16/03   TNH/PJZ   Updated with the Document Object specifications. Added CloseJob
732   that PSI is using. Renamed SendData to SendDocumentData to indicate what data.
733   Prefixed JobId, JobPrinterUri, and JobUri Document Description elements with Document,
734   so no Document attributes have a Job prefix. Added the following Document Description
735   elements: DocumentContainerSummary, DocumentCreatorApplicationName,
736   DocumentCreatorApplicationVersion, DocumentCreatorOsName,
737   DocumentCreatorOsVersion, DocumentFormatDetected, DocumentFormatDeviceId,
738   DocumentFormatVersion, DocumentIdUri, DocumentMessage, ElementNaturalLanguage.

739 1/29/03   PJZ   Incorporated comments from Face to Face preparing document for Last Call.
740   Updated abstract, introdusction and terminology sections. Added section to capture known
741   semantic elements "waiting in the wings". Sorted status strings alphabetically. Added PSI
742   specific actions and status strings. Corected Job & Doc state transition diagrams.

743 1/13/03   PJZ   Expanded on Processing Actual Element, Incorporated comments from
744   teleconference

745 11/1/02   PJZ   Fixed up status code tables. The DocumentProcessing subgroups were
746   merged into the DocumentProcessing element.   Moved fidelity elements to JobDescription.
747   Finished incorporating Prod-Print2 and rfc3381 elements. Cross checked figures tables and
748   associated schema. Added –Actual extension.

749 10/28/02   PJZ   "XML"ified attributes and object & added IPP mapping information
750   describing change. Completed adding [admin-ops], [PWG5100.1]. Rationalized "Pages"
751   and "PageRanges". Changed "State" groups to "Status" to avoid name collision with
752   "State" elements (e.g. "JobState")

753 10/14/01   TNH   Fixed some Figure caption problems. Instead of deprecating
754   AttributeFidelity, made it work with JobMandatoryAttributes. Added way to specify the
755   member attribute in a collection attribute (Attr.Member). Clarified PagesPerSubset as
756   combining all Input Documents into a single contiguous Input-Pages stream and then
757   subsetting it into Output Documents. Added GeneratedNaturalLanguageSupported from
758   RFC 2911.

759 10/07/02   PJZ   Updated references. Added JobCoverFront, JobCoverBack, and natural
760   language elements. Reworked section 5.3.5 GetPrinterSettableAttributeValues. Corrected
761   Action table and section.

762 9/30/02   PJZ   Began conversion of status string section to table. Corrected and updated
763   figures. Removed detailed IPP encoding section. Added globalization section

764 9/27/02   TNH   Version 0.11: Spell checked, corrected some misspelled attribute names,.
765   Finished moving Compression and DocumentFormat from the Processing to the Document
766   Description tables. Improved the attributes descriptions, especially those that are related to
767   other attributes. Added the attributes and values from [prod-print2]. Added several
768   attributes from IPP documents that were missing for some reason. Corrected a number of
769   Maxlength values. Sorted the values of JobStateReasons, DocumentStateReasons, and
770   PrinterStateReasons, so easier to keep track of. Add References: [adm-ops], [prod-print2].

771 9/16/02   PJZ   Added more definitions and document actions. Incorporated the comments
772   from teleconference and TH mail note. Updated references.

773 9/9/02   PJZ   Final edits to ready document for review. Updated all figures and added
774   highlighting of sections to review.

775 9/1/02   PJZ   Changes from email input and PWG meeting. Printer/Job/Document
776   Attribute groups broken out into State and Description groups

777 8/16/02   PJZ   Changed Content back to document, Added PWG5100.1, PWG5100.2,
778   PWG5100.3, PWG5100.4, job-progress to model. Filled out document object, added "Job
779   Level" subcategory to Processing attributes

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780	6/17/02	PJZ	Added high level description of PWG Action semantics and Printer state
781			transitions. Returned VersionsSupported and OperationsSupported.
782	6/4/02	SAA	Modified to split the Job Attributes into 3 categories:

783   1) Processing Attributes

784   2) Content Attributes

785   3) Job Attributes

786

787   The Processing Attributes were further split into 3 subcategories:

788   1) Rendering attributes

789   2) Imposition Attributes

790   3) Finishing Attributes

791   Added attributes from UPnP Print Basic service template: MediaSize, MediaType,
792   DeviceId attributes.

793   Removed references to Mandatory vs. Optional since a semantic model should not
794   dictate what is used or not used by the future solutions targeted at specific markets.
795   For example, UPnP picked specific attributes for the SOHO market and did not need
796   all of the Mandatory IPP attributes.

797   Modified Printer Description Attributes with the following:

798   1) Added in DeviceId.

799   2) Changed Document* to Content*.

800   3) Removed VersionsSupported and OperationsSupported since these are
801   dependent on the interface used in specific solutions.

802 5/29/02 PJZ Incorporated comments prior to initial release

803 5/26/02 TH detailed review of the draft

804 5/23/02 TH re-organize draft with comments from Melinda Grant

805 5/16/02 PJZ original draft

806

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13 Appendix A – UPnP Definitions

13.1 DeviceId

868 The value of this variable MUST exactly match the IEEE 1284-2000 Device ID string, except the
869 length field MUST not be specified.. The value is assigned by the Printer vendor and MUST NOT
870 be localized by the Print Service.

871 The IEEE 1284-2000 Device ID is a length field followed by a case-sensitive string of ASCII
872 characters defining peripheral characteristics and/or capabilities. For the purposes of this

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873 specification, the length bytes MUST NOT be included. The Device ID sequence is composed of a
874 series of keys and values of the form:

875 `key: value {,value} repeated for each key`

876 As indicated, each key will have one value, and MAY have more than one value. The minimum
877 necessary keys (case-sensitive) are MANUFACTURER, COMMAND SET, and MODEL. (These
878 keys MAY be abbreviated as MFG, CMD, and MDL respectively.) Each implementation MUST
879 supply these three keys and possibly additional ones as well. Each key (and each value) is a string
880 of characters. Any characters except colon (:), comma (,), and semi-colon (;) MAY be included as
881 part of the key (or value) string. Any leading or trailing white space (SPACE[x'20'], TAB[x'09'],
882 VTAB[x'0B'], CR[x'0D'], NL[x'0A'], or FF[x'0C']) in the string is ignored by the parsing program
883 (but is still counted as part of the overall length of the sequence).

884 An example ID String, showing optional comment and active command set keys and their
885 associated values (the text is actually all on one line):

886

887 `MANUFACTURER:ACME Manufacturing;`

888 `COMMAND SET:PCL,PJL,PS,XHTML-Print+xml;`

889 MODEL:LaserBeam 9;

890 `COMMENT:Anything you like;`

891 `ACTIVE COMMAND SET:PCL;`

892

893 (See IEEE 1284-2000 clause 7.6)

894 Note: One of the purposes of the DeviceId variable is to select a printer driver for those clients that
895 need a printer driver. The values of the COMMAND SET key are interpreted by the printer driver
896 provided by the vendor and so are vendor-defined, rather than being standardized.

14 Appendix B – IPP Mapping

14.1 Changes to remove some IPP specific aspects

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

901 1. IPP enumerations use their well-known string name instead of the integer enumeration.
902 This applies not only to IPP attributes but also to IPP Operations.

903 2. Any IPP attribute name containing "ipp" has had the "ipp" removed.

904 3. All IPP attribute and operation keywords have the substring "attribute" replaced with
905 "element".

906 4. All IPP operation, status codes, attribute, and attribute value keyword names have had the
907 first letter capitalized and the '-' character removed and the character following the '-' has
908 been capitalized. (All mixed case PWG Semantic Model keywords can be interpreted
909 without regard to case.)

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910   5.   The IPP attribute value keywords defined in other registries remain unchanged. Note that
911   the PWG defined media keyword values for the Semantic Elements MediaType,
912   MediaColor, MediaSizeName and Media use the values as specified in PWG 5101.1.

913   6.   The types of the attributes have been simplified. All keyword, text, name, DateTime, uri,
914   UriScheme, enum and mimeMediaType types are represented by the simple string type.
915   The "Constraint" column in section 7 clarifies the mapping of the string types in the
916   Semantic Model to their original types (e.g. JobState type:string constraint: Type 1
917   keyword). Note that IPP Attributes of type Keyword or Name are represented as strings
918   with a Type 2 or 3 keyword constraint

919   7.   The "1setOf X" types are represented as the base type and the "Multivalued" field in the
920   tables set to "Yes".

921   8.   Integers and Boolean types remain the same.

922   9.   Any applicable constraints placed on the attribute values has been noted in the tables.

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

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

14.2 Attribute Group Mapping

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

931 The IPP Printer Description Attributes map to the PWG Printer Status Elements and Printer
932 Description Elements. The IPP Job Description Attributes map to the PWG Job Status Elements
933 and Job Description Elements.

934 The IPP Job Template Attributes map to the PWG Job Processing Elements and Document
935 Processing Elements. IPP does not differentiate between the PWG Processing Elements subgroups
936 of Rendering, Imposition and Finishing Elements.

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JobSheetCollate		String	Maxlength=255	D	[prod-print2] §5.6
	Contains the name of the person that is to receive the output of this Job and is commonly printed on the job sheet. It may also be used to reference a database containing delivery instructions for the recipient.				

DocumentCreatorApplicationName		String	Maxlength=255	D	[doc-obj] §6.1.2.1
	The name of the application that created the document, without its version number. (examples: "Photoshop", "Microsoft Word")				
DocumentCreatorApplicationVersion		String	Maxlength=127	D	[doc-obj] §6.1.2.2
	The version of the application that created the document, without its name. (examples: 'V3.0.', 'V6.0')				
DocumentCreatorOsName		String	Maxlength=40	D	[doc-obj] §6.1.2.3
	The name of the operating system, without version number, on which the document was generated (see IANA [os-names]). (examples: 'LINUX', 'MACOS', 'NETWARE', 'WINDOWS')				
DocumentCreatorOsVersion		String	Maxlength=127	D	[doc-obj] §6.1.2.4
	The version of the operating system, without its name, on which the document was generated (see IANA [os-names]. (examples: For LINUX = '1.0', 2.4'; For WINDOWS = '95', 'NT', 'NT-4', '2000', 'XP')				

DocumentIdUri		String	Maxlength=1023	S	[doc-obj] §8.2.12
	The Printer sets this to a globally unique URI for the purposes of providing a unique id. However, no client can use it as the target of any operation. (example: ipp://www.company.com/printers/myprinter/jobs/22/doc3)				
DocumentJobId		integer	1:MAX	S	[doc-obj] §8.2.13
	The Printer sets this to the ID of the Job containing this Document, i.e., a copy of the Job's JobId. The ID is unique for the Printer.				
DocumentJobPrinterUri		String	Maxlength=1023	S	[doc-obj] §8.2.14
	The Printer sets this to the URI of the Printer, i.e., a copy of the Job's JobPrinterUri element. (example: ipp://www.company.com/printers/myprinter)				
DocumentJobUri		String	Maxlength=1023	S	[doc-obj] §8.2.15
	The Printer sets this to the URI for the job, i.e., a copy of the Job's JobUri. The URI is globally unique. (example: ipp://www.company.com/printers/myprinter/jobs/22)				

DocumentCreatorApplicationName Implemented	YES	String	Maxlength=255	D	[doc-obj] §9.3 [doc-obj] §6.1.2.1
	The names of the applications that the Printer will accept if supplied by the Client in DocumentFormatDetails. (examples: "Photoshop", "Microsoft Word") . (See DocumentFormatDetailsImplemented for use)				
DocumentCreatorApplicationVersion Implemented	YES	String	Maxlength=127	D	[doc-obj] §9.3 [doc-obj] §6.1.2.2
	The versions of the applications that the Printer will accept if supplied by the Client in DocumentFormatDetails. (examples: 'V3.0.', 'V6.0') . (See DocumentFormatDetailsImplemented for use)				

DocumentCreatorOsName Implemented	YES	String	Maxlength=40	D	[doc-obj] §9.3 [doc-obj] §6.1.2.3
	The names of the operating systems that the Printer will accept if supplied by the Client in DocumentFormatDetails (see IANA [os-names]). (examples: 'LINUX', 'MACOS', 'NETWARE', 'WINDOWS') . (See DocumentFormatDetailsImplemented for use)				
DocumentCreatorOsVersion Implemented	YES	String	Maxlength=127	D	[doc-obj] §9.3 [doc-obj] §6.1.2.4
	The versions of the operating systems that the Printer will accept if supplied by the Client in DocumentFormatDetails (examples: For LINUX = '1.0', 2.4'; For WINDOWS = '95', 'NT', 'NT-4', '2000', 'XP') . (See DocumentFormatDetailsImplemented for use)				

DocumentFormatDetailsImplemented	YES	Complex		D	[doc-obj] §9.3
Lists the combinations of the values of the member attributes of "document-format-details" that the Printer will accept if supplied by the client in a Document creation Action. *(Includes* DocumentCreatorApplicationNameImplemented, *DocumentCreatorApplicationVersion*Implemented, *DocumentCreatorOsName*Implemented, *DocumentCreatorOsVersion*Implemented, *DocumentFormatDeviceId*Implemented, *DocumentFormat*Implemented, *DocumentFormatVersion*Implemented, *DocumentNaturalLanguage*Implemented*).*					

DocumentFormatDevice IdImplemented	YES	String	Maxlength=127	D	[doc-obj] §9.3 [doc-obj] §6.1.2.6
	Identifies the type of devices that the Printer will accept if supplied by the Client in DocumentFormatDetails. (example: `MANUFACTURER:ACME Co.;COMMAND SET:PS;MODEL:LaserBeam 9;`) (See DocumentFormatDetailsImplemented for use)				

DocumentNaturalLanguage Implemented	YES	String	Maxlength=127	D	[doc-obj] §9.3 [doc-obj] §6.1.2.8
	Identifies the primary Natural Languages that the Printer will accept if supplied by the Client in DocumentFormatDetails. (See DocumentFormatDetailsImplemented for use)				