~~PWG WORKING~~ INTERNET-DRAFT 6 ISSUES are highlighted like this.
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IPP/1.0 and IPP/1.1: Job Progress Attributes ~~and Event Report Content~~

~~Version 0.3~~

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Abstract

This ~~paper~~ document defines five new Job Description attributes for monitoring job progress to be registered for use with IPP/1.0 [RFC2566] and IPP/1.1 [ipp-mod]. These attributes are drawn from the PWG Job Monitoring MIB [jmp-mib]. ~~They were originally contained in the long notification proposal [ipp-not-long], and have been placed in this separate more manageable-sized specification.~~ This ~~paper~~ document also defines a new "sheet-collate" Job Template attribute to control sheet collation and to help with the interpretation of the job progress attributes. ~~This paper also defines a new IPP notification event report format that includes these attributes and some existing attributes.~~ These new attributes may also be used by themselves as useful job progress monitoring attributes and/or may be passed in an IPP Notification (see [ipp-not]). The new Job Description attributes are:

"job-collation-type" (type2 enum)
"sheet-completed-copy-number" (integer(-2:MAX))
"sheet-completed-document-number" (integer(-2:MAX))
"impressions-interpreted" (integer(-2:MAX))
"impressions-completed-current-copy" (integer(-2:MAX))

The new Job Template attribute is:

"sheet-collate" (boolean) ~~-- Job Template attribute~~

TABLE OF CONTENTS

1 New Job Template attribute

1.1 "sheet-collate" (boolean)

Job Attribute	Printer: Default Value Attribute	Printer: Supported Values Attribute
sheet-collate (boolean)	sheet-collate-default (boolean)	sheet-collate-supported (1setOf boolean)

This attribute specifies whether or not the media sheets of each copy of each printed document in a job are to be in sequence, when multiple copies of the document are specified by the 'copies' attribute. When "sheet-collate" is 'true', each copy of each document is printed with the print-stream sheets in sequence. When 'sheet-collate' is 'false', each print-stream sheet is printed a number of times equal to the value of the 'copies' attribute in succession. For example, suppose a document which produces two media sheets as output, and "copies" is equal to '6', in this case six copies of the first media sheet are printed followed by six copies of the second media sheet.

Whether the effect of sheet collation is achieved by placing copies of a document in multiple output bins or in the same output bin with implementation defined document separation is implementation dependent. Also whether it is achieved by making multiple passes over the job or by using an output sorter is implementation dependent.

Note: IPP/1.0 [RFC2566] and IPP/1.1 [ipp-mod] is silent on whether or not sheets within documents are collated. The "sheet-collate-supported" attribute permits a Printer object to indicate whether or not it collates sheets with each document and whether it allows the client to control sheet collation. An implementation is able to indicate that it supports uncollated sheets, collated sheets, or both, using 'false', 'true', or both 'false' and 'true' values, respectively.

2 New IPP Job Description attributes for monitoring Job Progress

The following IPP Job Description attributes are proposed to be added to IPP through the type2 registration procedures. They are useful for monitoring the progress of a job. They are also used at attributes in the notification content in a notification report [ipp-not].

There are a number of Job Description attributes for monitoring the progress of a job. These objects and attributes count the number of K octets, impressions, sheets, and pages requested or completed. For impressions and sheets, "completed" means stacked, unless the implementation is unable to detect when each sheet is stacked, in which case stacked is approximated when processing of each sheet completes. There are objects and attributes for the overall job and for the current copy of the document currently being stacked. For the latter, the rate at which the various objects and attributes count depends on the sheet and document collation of the job.

Consider the following four Job Description attributes that are used to monitor the progress of a job's impressions:

1. "job-impressions-completed" - counts the total number of impressions stacked for the job
2. "impressions-completed-current-copy" - counts the number of impressions stacked for the current document copy
3. "sheet-completed-copy-number" - identifies the number of the copy for the current document being stacked where the first copy is 1.
4. "sheet-completed-document-number" - identifies the current document within the job that is being stacked where the first document in a job is 1. NOTE: this attribute SHOULD NOT be implemented for implementations that only support one document per job.

For each of the three types of job collation, a job with three copies of two documents (1, 2), where each document consists of 3 impressions, the four variables have the following values as each sheet is stacked for one-sided printing:

"job-collation-type" = 'uncollated-sheets(3)'

"job-impressions-completed"	"impressions-completed-current-copy"	"sheet-completed-copy-number"	"sheet-completed-document-number"
0	0	0	0
1	1	1	1
2	1	2	1
3	1	3	1
4	2	1	1
5	2	2	1
6	2	3	1
7	3	1	1
8	3	2	1
9	3	3	1
10	1	1	2
11	1	2	2
12	1	3	2
13	2	1	2
14	2	2	2
15	2	3	2
16	3	1	2
17	3	2	2
18	3	3	2

"job-collation-type" = 'collated-documents(4)'

"job-impressions-completed"	"impressions-completed-current-copy"	"sheet-completed-copy-number"	"sheet-completed-document-number"
0	0	0	0
1	1	1	1
2	2	1	1
3	3	1	1
4	1	1	2
5	2	1	2
6	3	1	2
7	1	2	1
8	2	2	1
9	3	2	1
10	1	2	2
11	2	2	2
12	3	2	2
13	1	3	1
14	2	3	1
15	3	3	1
16	1	3	2
17	2	3	2
18	3	3	2

"job-collation-type" = 'uncollated-documents(5)'

"job-impressions-completed"	"impressions-completed-current-copy"	"sheet-completed-copy-number"	"sheet-completed-document-number"
0	0	0	0
1	1	1	1
2	2	1	1
3	3	1	1
4	1	2	1
5	2	2	1
6	3	2	1
7	1	3	1
8	2	3	1
9	3	3	1
10	1	1	2
11	2	1	2
12	3	1	2
13	1	2	2
14	2	2	2
15	3	2	2
16	1	3	2
17	2	3	2
18	3	3	2

2.1 "job-collation-type" (type2 enum)

ISSUE 1 - Or should the attribute syntax by 'type2 keyword' to go with "multiple-document-handling(type2 keyword)", instead of the Job MIB enum syntax?

Job Collation includes sheet collation and document collation. Sheet collation is defined to be the ordering of sheets within a document copy. Document collation is defined to be ordering of document copies within a multi-document job. The value of the "job-collation-type" is affected by the value of the "sheet-collate" Job Template attribute (see section 1.1), if supplied and supported.

The Standard enum values are:

'1' 'other': not one of the defined values

'2' 'unknown': the collation type is unknown

ISSUE 2 - Or should we use the IPP out-of-band 'unknown' value (see [ipp-mod] section 4.1) instead of this Job Monitoring MIB value?

'3' 'uncollated-sheets': No collation of the sheets within each document copy, i.e., each sheet of a document that is to produce multiple copies is replicated before the next sheet in the document is processed and stacked. If the device has an output bin collator,

the 'uncollated-sheets(3)' value may actually produce collated sheets as far as the user is concerned (in the output bins). However, when the job collation is the 'uncollated-sheets(3)' value, job progress is indistinguishable to a monitoring application between a device that has an output bin collator and one that does not.

'4' 'collated-documents': Collation of the sheets within each document copy is performed within the printing device by making multiple passes over either the source or an intermediate representation of the document. In addition, when there are multiple documents per job, the i'th copy of each document is stacked before the j'th copy of each document, i.e., the documents are collated within each job copy. For example, if a job is submitted with documents, A and B, the job is made available to the end user as: A, B, A, B, …. The 'collated-documents(4)' value corresponds to the IPP [ipp-model] 'separate-documents-collated-copies' keyword value of the "multiple-document-handling" attribute.

If the job's "copies" attribute is '1' (or not supplied), then the "job-collation-type" attribute is defined to be '4'.

'5' 'uncollated-documents': Collation of the sheets within each document copy is performed within the printing device by making multiple passes over either the source or an intermediate representation of the document. In addition, when there are multiple documents per job, all copies of the first document in the job are stacked before the any copied of the next document in the job, i.e., the documents are uncollated within the job. For example, if a job is submitted with documents, A and B, the job is mad available to the end user as: A, A, …, B, B, …. The 'uncollated-documents(5)' value corresponds to the IPP [ipp-model] 'separate-documents-uncollated-copies' keyword value of the "multiple-document-handling" attribute.

2.2 "sheet-completed-copy-number" (integer(-2:MAX))

The number of the copy being stacked for the current document. This number starts at 0, is set to 1 when the first sheet of the first copy for each document is being stacked and is equal to n where n is the nth sheet stacked in the current document copy. See section .

ISSUE 3: Should we change the lower limit to 0 and use the IPP out-of-bound values: 'unknown' for -2?

2.3 "sheet-completed-document-number" (integer(-2:MAX))

The ordinal number of the document in the job that is currently being stacked. This number starts at 0, increments to 1 when the first sheet of the first document in the job is being stacked, and is equal to n where n is the nth document in the job, starting with 1.

Implementations that only support one document jobs SHOULD NOT implement this attribute.

ISSUE 4: Should we change the lower limit to 0 and use the IPP out-of-bound values: 'unknown' instead of '-2'?

2.4 "impressions-interpreted" (integer(-2:MAX))

The number of impressions interpreted for the job so far.

ISSUE 5: Should we change the lower limit to 0 and use the IPP out-of-bound values: 'unknown' instead of '-2'?

2.5 "impressions-completed-current-copy" (integer(-2:MAX))

The number of impressions completed by the device for the current copy of the current document so far. For printing, the impressions completed includes interpreting, marking, and stacking the output. For other types of job services, the number of impressions completed includes the number of impressions processed.

This value SHALL be reset to 0 for each document in the job and for each document copy.

ISSUE 6: Should we change the lower limit to 0 and use the IPP out-of-bound values: 'unknown' instead of '-2'?

~~3Job Progress Events Report Format~~

~~This section lists the parameters and attributes that are included in the Basic Job event report content. Additional job events can be registered which use the Basic Job Event report content.~~

~~If the 'job-progress-events' event is supported, the implementation MUST support the following REQUIRED job object attributes, MUST support the following CONDITIONAL job object attributes, if the condition is true, and MAY support the following OPTIONAL job object attributes. Any of the following Job Description attributes that are supported MUST be included in an event report. All job event reports MUST use the Get-Job-Attributes response syntax. The Job Progress Event Report MUST include the following response parameters and job object attributes. The Job Attributes MAY be in any order:~~

Job object parameter/attribute	REQUIRED IN REPORT?	reference
version-number	REQUIRED	[ipp-mod] 3.1.1
status-code (with the value: job-progress-event(602))	REQUIRED	[ipp-mod] 3.1.1
request-id (with a 0 value)	REQUIRED	[ipp-mod] 3.1.1
job-printer-uri (uri)	REQUIRED	[ipp-mod] 4.3.3
job-id (integer(1:MAX))	REQUIRED	[ipp-mod] 4.3.2
job-trigger-events (1setOf type2 keyword)	REQUIRED	section **Error! Reference source not found.**
job-trigger-time (integer(1:MAX))	REQUIRED	section **Error! Reference source not found.**
job-collation-type (type2 enum)	REQUIRED	section 2.1
sheet-completed-copy-number (integer(-2:MAX))	REQUIRED	section 2.2
sheet-completed-document-number (integer(-2:MAX))	REQUIRED	section 2.3
impressions-interpreted (integer(-2:MAX))	REQUIRED	section 2.4
impressions-completed-current-copy (integer(-2:MAX))	REQUIRED	section 2.5
subscription-id* (integer(1:MAX))	CONDITIONAL	[ipp-sub] 4.2

Figure 1 - Job Progress Event Report Content

* If Job Independent Subscriptions [ipp-sub] is implemented and the event report is caused by an independent subscription request, the "subscription-id" MUST be supplied in the event report content.

If the values of any of the attributes sent in an event report content are not known, the value sent in the report content is the out-of-band 'unknown' value, rather than omitting the attribute. See [ipp-mod] section 4.1.

3 References

[ipp-mod]

deBry, R., , Hastings, T., Herriot, R., Isaacson, S., Powell, P., "Internet Printing Protocol/1.1: Model and Semantics", <draft-ietf-ipp-model-v11-042.txt>, work in progress, ~~May 10~~June 23, 1999.

~~[ipp-not-long]~~

~~Hastings, T., Isaacson, S., Lewis, H., "Event notifications for the IPP print protocol [and JMP]", <ipp-notification-proposal-980701>, work in progress, May 12, 1998.~~

[ipp-not]

Isaacson, S., Martin, J., deBry, R., Hastings, T., Shepherd, M., Bergman, R., " IPP Event Notification Specification~~s~~", <draft-ietf-ipp-not-spec-02.txt~~ipp-event-notification-990518.doc~~>, work in progress, ~~May 18~~September 10, 1999.

~~[ipp-sub]~~

~~Isaacson, S., Martin, J., deBry, R., Hastings, T., "Job Independent Subscriptions for IPP", <ipp-notification-printer-990519>, work in progress, May 19, 1999.~~

[jmp-mib]

Bergman, R., Hastings, T., Isaacson, S., Lewis, H. "PWG Job Monitoring MIB - V1", <draft-ietf-printmib-job-monitor-08.txt>, work in progress, Feb 19, 1999.

[rfc2566]

deBry, R., , Hastings, T., Herriot, R., Isaacson, S., Powell, P., "Internet Printing Protocol/1.0: Model and Semantics", RFC 2566, April 1999.

4 Change History

4.1 Changes made to the May 19, 1999 version to make the September 13, 1999 version

The following changes were made to the May 19, 1999 version to make the September 13, 1999 version:

1. Changed it from a PWG to an IETF specification so that it can be cited from the IETF Notification documents.
2. Removed the reference to the long Notification spec from 1998, since it isn't going to be an IETF document.
3. Removed the notification content section, since the Notification specification now includes the 'job-progress' event and the associated notification content.

4.2 Changes made to the April 16, 1999 version to make the May 19, 1999 version

The following changes were made to the April 16, 1999 version to make the May 19, 1999 version:

1. Added the "sheet-collate" Job Template attribute.
2. Added the 'job-progress-event' report content type.