# IPP Attributes for Job Creation operations - for FSG Job Ticket WG
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**Version: 0.2 -- Don't forget to update the IPP Code Allocations document!**

The purpose of this document is to give a simple list of the IPP attributes that need to be supported in a Job Ticket API, a Job Capability API, and in a Job Ticket. Since we are discussing including the results of job processing in a copy of the Job Ticket, the Job Description attributes are included here also.

This document lists the attributes defined in [RFC2911] and extension documents (IETF and IEEE-ISTO documents) that a client can supply in a Job Creation operation: Print-Job, Print-URI, and Create-Job. The Print-Job operation request contains the attributes and a single Document Content. The Print-URI operation request contains the attributes and a URL to a single Document Content (print-by-reference). The Create-Job operation request contains the attributes only; subsequent Send-Document and/or Send-URI operation requests supply the Document Content and URI, respectively.

In the tables, the Conformance columns indicate the conformance requirements for the client to supply in a Job Creation request and for the Printer to support in a Job Creation request. The Reference column indicates the IPP specification document in which the semantics of the attribute are defined (see section 5).

The attributes are separated into Operation attributes, Job Template attributes, and Subscription Template attributes. Operation attribute control the Job Creation operation itself while the Job Template attribute reflect the printing features of the Printer. Subscription Template attributes specify Event Notification.

A number of attributes have an attribute syntax of 'collection' (see [ipp-coll]). The value of a collection attribute is, itself, a set of attributes called member attributes. The member attribute are also listed in the tables in this document. Some of the collection attributes also have a simpler form, consisting of a single value that identifies a supported entity in the Printer, such as a start-sheet-format or media. For example, the "media" and "media-col" attributes are both defined, as are the "job-sheets" and "job-sheets-col" attributes. For a Job Ticket API, each pair of attributes could/should be combined into a single class.

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# 1 Operation Attributes for the Job Creation operations

Operation attributes relate to the operation and do not depend on the printing capabilities of the Printer.

## 1.1 Operation Attributes supplied in Job Creation requests

Table 1 lists the Operation attributes that clients supply in Job Creation operation *requests*: Print-Job, Print-URI, and Create-Job. The value of the "ipp-attribute-fidelity" operation attribute does *not* affect the Printer's handling of the other operation attributes, only its handling of the Job Template attributes (see section 2).

**Table 1 - Operation Attributes supplied in Job Creation operation *requests***

| Operation attribute | Attribute Syntax | Conformance | | Reference |
|---|---|---|---|---|
| | | Client supply | Printer support | |
| attributes-charset | charset | MUST | MUST | [RFC2911] |
| attributes-natural-language | naturalLanguage | MUST | MUST | [RFC2911] |
| compression | type3 keyword | MAY | MUST | [RFC2911] |
| document-format | mimeMediaType | MAY | MUST | [RFC2911] |
| document-name | name(MAX) | MAY | MUST | [RFC2911] |
| document-natural-language | naturalLanguage | MAY | MAY | [RFC2911] |
| ipp-attribute-fidelity | boolean | MAY | MUST | [RFC2911] |
| job-impressions | integer(0:MAX) | MAY | MAY | [RFC2911] |
| job-k-octets | integer(0:MAX) | MAY | MAY | [RFC2911] |
| job-media-sheets | integer(0:MAX) | MAY | MAY | [RFC2911] |
| job-name | name(MAX) | MAY | MUST | [RFC2911] |
| operation-id | integer(1:0x8FFF) | MUST | MUST | [RFC2911] |
| printer-uri | uri | MUST | MUST | [RFC2911] |
| request-id | integer(1:MAX) | MUST | MUST | [RFC2911] |
| requesting-user-name | name(MAX) | SHOULD | MUST | [RFC2911] |
| version-number | X.Y | MUST | MUST | [RFC2911] |

## 1.2 Operation Attributes returned in Job Creation responses

Table 2 lists the Operation attributes that Printers return in Job Creation operation *responses*.

**Table 2 - Operation attributes returned in Job Creation operation *responses***

| Operation attribute | Attribute Syntax Values | Conformance | | Reference |
|---|---|---|---|---|
| | | Printer return | Printer support | |
| **attributes-charset \*** | charset | MUST | MUST | [RFC2911] |
| | 'utf-8' | MAY | MUST | [RFC2911] |
| | 'us-ascii' | MAY | MAY | [RFC2911] |
| | 'iso-8859-1' | MAY | MAY | [RFC2911] |
| | 'iso-10646-ucs-2' | MAY | MAY | [RFC2911] |
| **attributes-natural-language \*** | naturalLanguage | MUST | MUST | [RFC2911] |
| | 'en-US' | MAY | MAY | [RFC2911] |
| **detailed-status-message \*** | text | MAY | MAY | [RFC2911] |
| **document-access-error** | text | MAY | MAY | [RFC2911] |
| **job-id** | integer(1:MAX) | MUST | MUST | [RFC2911] |
| **job-uri** | uri | MUST | MUST | [RFC2911] |
| **request-id \*** | integer(1:32767) | MUST | MUST | [RFC2911] |
| **status-code \*** | integer(0:32767) (*See Appendix A for mapping of values*) | MUST | MUST | [RFC2911] |
| **status-message \*** | text(255) | MAY | MAY | [RFC2911] |
| **version-number \*** | integer(1:255), integer(0:255) | MUST | MUST | [RFC2911] |

## 2  Job Template attributes

Table 3 lists the Job Template attributes used in the Job Creation operations: Print-Job, Print-URI, and Create-Job.  Job Template attributes are OPTIONAL for a Printer to support and for a client to supply in a Job Creation request.  However, if a Job Template collection attribute is supported, then there are conformance requirements for which member attributes MUST be supported and which member attributes a client MUST supply as indicated in the Conformance column in each collection attribute value.  The value of the "ipp-attribute-fidelity" operation attribute (see section 1) affects the Printer action when an unsupported Job Template attribute is supplied in a Job Creation request.  If 'true', the Printer MUST reject the request, if 'false' the Printer MUST accept the request and ignore or substitute the unsupported Job Template attribute.

**Table 3 - Job Template attributes**

| Job Template attribute | Attribute Syntax | Conformance | | Reference |
|---|---|---|---|---|
| | | Client supply | Printer support | |
| copies | integer(1:MAX) | MAY | MAY | [RFC2911] |
| cover-back | collection | MAY | MAY | [ipp-prod-print] |
|    media | type3 keyword \| name(MAX) | MAY be | MUST | [ipp-prod-print] |
|    media-col | collection | neither or one of, but NOT both | MAY | [ipp-prod-print] |
|    cover-type | type2 keyword | MUST | MUST | [ipp-prod-print] |
| cover-front | collection | MAY | MAY | [ipp-prod-print] |
|    media | type3 keyword \| name(MAX) | MAY be | MUST | [ipp-prod-print] |
|    media-col | collection | neither or one of, but NOT both | MAY | [ipp-prod-print] |
|    cover-type | type2 keyword | MUST | MUST | [ipp-prod-print] |

| Job Template attribute | Attribute Syntax | Conformance | | Reference |
|---|---|---|---|---|
| | | Client supply | Printer support | |
| document-overrides | collection | MAY | MAY | [ipp-override] |
| input-documents | 1setOf rangeOfInteger(MAX) | MUST be one or the other, but NOT both | MUST | [ipp-override] |
| output-documents | 1setOf rangeOfInteger(MAX) | | MUST | |
| document-copies | 1setOf rangeOfInteger(MAX) | MAY | MAY | [ipp-override] |
| document-format | mimeMediaType | MAY | CMUST[1] | [ipp-override] |
| document-name | name (MAX) | MAY | CMUST[1] | [ipp-override] |
| compression | type3 keyword | MAY | CMUST[1] | [ipp-override] |
| document-natural-language | naturalLanguage | MAY | MAY | [ipp-override] |
| page-ranges | 1setOf rangeOfInteger (1:MAX) | MAY | MAY | [ipp-override] |
| *any other Job Template attributes that affect documents, such as "media" or "media-col"* | | MAY | MAY | |
| finishings | 1setOf type2 enum | MAY be neither or one of, but NOT both | MAY, MUST if "finishing-col" is supported | [RFC2911] |
| finishings-col | collection | | MAY | [ipp-prod-print] |
| finishing-template | name(MAX) | MAY | MAY | [ipp-prod-print] |
| stitching | collection | MAY | MAY | [ipp-prod-print] |
| stitching-reference-edge | type2 keyword | MUST | MUST | [ipp-prod-print] |
| stitching-offset | integer (0:MAX) | MUST | MUST | [ipp-prod-print] |
| stitching-locations | 1setOf integer(0:MAX) | MUST | MUST | [ipp-prod-print] |
| force-front-side | 1setOf integer(1:MAX) | MAY | MAY | [ipp-prod-print] |
| imposition-template | type2 keyword | name(MAX) | MAY | MAY | [ipp-prod-print] |
| insert-sheet | 1setOf collection | MAY | MAY | [ipp-prod-print] |
| insert-after-page-number | integer(0:MAX) | MUST | MUST | [ipp-prod-print] |
| insert-count | integer(0:MAX) | MAY | MUST | [ipp-prod-print] |
| media | type3 keyword | name(MAX) | MUST be one or the other, but NOT both | MUST | [ipp-prod-print] |
| media-col | collection | | MAY | [ipp-prod-print] |
| job-account-id | name(MAX) | MAY | MAY | [ipp-prod-print] |
| job-accounting-sheets | collection | MAY | MAY | [ipp-prod-print] |

[1] The Printer MUST support this member attribute if the Printer supports the Create-Job operation.

| Job Template attribute | Attribute Syntax | Conformance | | Reference |
|---|---|---|---|---|
| | | Client supply | Printer support | |
|    job-accounting-sheets-type | type3 keyword \| name(MAX) | MUST | MUST | [ipp-prod-print] |
|    media | type3 keyword \| name(MAX) | MAY be neither or one of, but NOT both | MUST | [ipp-prod-print] |
|    media-col | collection | | MAY | [ipp-prod-print] |
|    job-accounting-output-bin | type3 keyword \| name(MAX) | MAY | MAY | [ipp-prod-print] |
| job-accounting-user-id | name(MAX) | MAY | MAY | [ipp-prod-print] |
| job-error-sheet | collection | MAY | MAY | [ipp-prod-print] |
|    job-error-sheet-type | type3 keyword \| name(MAX) | MUST | MUST | [ipp-prod-print] |
|    job-error-sheet-when | type2 keyword | MAY | MAY | [ipp-prod-print] |
|    media | type3 keyword \| name(MAX) | MAY be neither or one of, but NOT both | MUST | [ipp-prod-print] |
|    media-col | collection | | MAY | [ipp-prod-print] |
| job-hold-until | type3 keyword \| name(MAX) | MAY | MAY | [RFC2911] |
| job-message-to-operator | text(MAX) | MAY | MAY | [ipp-prod-print] |
| job-priority | integer(1:100 | MAY | MAY | [RFC2911] |
| job-sheet-message | text(MAX) | MAY | MAY | [ipp-prod-print] |
| job-sheets | type3 keyword \| name(MAX) | MAY be neither or one of, but NOT both | MAY, MUST if "job-sheets-col" supported | [RFC2911] |
| job-sheets-col | collection | | MAY | [ipp-prod-print] |
|    job-sheets | type3 keyword \| name(MAX) | MUST | MUST | [ipp-prod-print] |
|    media | type3 keyword \| name(MAX) | MUST be one or the other, but NOT both | MUST | [ipp-prod-print] |
|    media-col | collection | | MAY | [ipp-prod-print] |
| media | type3 keyword \| name(MAX) | MAY be neither or one of, but NOT both | MAY, MUST if "media-col" supported | [RFC2911] |
| media-col | collection | | MAY | [ipp-prod-print] |

| Job Template attribute | Attribute Syntax | Conformance | | Reference |
|---|---|---|---|---|
| | | Client supply | Printer support | |
| media-key | type3 keyword \| name(MAX) | MAY | MAY | [ipp-prod-print] |
| media-type) | type3 keyword \| name(MAX | MAY | MAY | [ipp-prod-print] |
| media-info | text(255) | MAY | MAY | [ipp-prod-print] |
| media-color | type3 keyword \| name(MAX) | MAY | MAY | [ipp-prod-print] |
| media-preprinted | type3 keyword \| name(MAX) | MAY | MAY | [ipp-prod-print] |
| media-hole-count | integer(0:MAX) | MAY | MAY | [ipp-prod-print] |
| media-order-count | integer(1:MAX) | MAY | MAY | [ipp-prod-print] |
| media-size | collection | MAY | MUST | [ipp-prod-print] |
| x-dimension | integer(0:MAX) | MUST | MUST | [ipp-prod-print] |
| y-dimension | integer(0:MAX) | MUST | MUST | [ipp-prod-print] |
| media-weight-metric | integer(0:MAX) | MAY | MAY | [ipp-prod-print] |
| media-front-coating | type3 keyword \| name(MAX) | MAY | MAY | [ipp-prod-print] |
| media-back-coating | type3 keyword \| name(MAX) | MAY | MAY | [ipp-prod-print] |
| media-recycled | type3 keyword \| name(MAX) | MAY | MAY | [ipp-prod-print] |
| media-input-tray-check | type3 keyword \| name(MAX) | MAY | MAY | [ipp-prod-print] |
| multiple-document-handling | type2 keyword | MAY | MUST if multiple document jobs supported | [RFC2911] |
| number-up | integer(1:MAX) | MAY | MAY | [RFC2911] |
| orientation-requested | type2 enum | MAY | MAY | [RFC2911] |
| output-bin | type2 keyword \| name(MAX) | MAY | MAY | [ipp-output-bin] |
| page-delivery | type2 keyword | MAY | MAY | [ipp-prod-print] |
| page-order-received | type2 keyword | MAY | MAY | [ipp-prod-print] |
| page-overrides | 1setOf collection | MAY | MAY | [ipp-override] |
| input-documents | 1setOf rangeOfInteger(MAX) | MUST be one or the other, but NOT both | MUST | [ipp-override] |
| output-documents | 1setOf rangeOfInteger(MAX) | | MUST | [ipp-override] |
| document-copies | 1setOf rangeOfInteger(MAX) | MAY | MAY | [ipp-override] |
| pages | 1setOf rangeOfInteger(MAX) | MUST | MUST | [ipp-override] |
| *any other Job Template attributes that affect pages, such as "media" or "media-col"* | | MAY | MAY | |
| page-ranges | 1setOf rangeOfInteger(1:MAX) | MAY | MAY | [RFC2911] |
| pages-per-subset | 1setOf integer(1:MAX) | MAY | MAY | [ipp-prod-print] |
| presentation-direction-number-up | type2 keyword | MAY | MAY | [ipp-prod-print] |
| print-quality | type2 enum | MAY | MAY | [RFC2911] |
| printer-resolution | resolution | MAY | MAY | [RFC2911] |

| Job Template attribute | Attribute Syntax | Conformance | | Reference |
|---|---|---|---|---|
| | | Client supply | Printer support | |
| separator-sheets | collection | MAY | MAY | [ipp-prod-print] |
|    separator-sheets-type | type3 keyword \| name(MAX) | MUST | MUST | [ipp-prod-print] |
|   media | type3 keyword \| name(MAX) | MAY be neither or one of, but NOT both | MUST | [ipp-prod-print] |
|   media-col | collection | | MAY | [ipp-prod-print] |
| sheet-collate | type2 keyword | MAY | MAY | [ipp-job-prog] |
| sides | type2 keyword | MAY | MAY | [RFC2911] |
| x-image-position | type2 keyword | MAY | MAY | [ipp-prod-print] |
| x-image-shift | integer(MIN:MAX) | MAY | MAY | [ipp-prod-print] |
| x-side1-image-shift | integer(MIN:MAX) | MAY | MAY | [ipp-prod-print] |
| x-side2-image-shift | integer(MIN:MAX) | MAY | MAY | [ipp-prod-print] |
| y-image-position | type2 keyword | MAY | MAY | [ipp-prod-print] |
| y-image-shift | integer(MIN:MAX) | MAY | MAY | [ipp-prod-print] |
| y-side1-image-shift | integer(MIN:MAX) | MAY | MAY | [ipp-prod-print] |
| y-side2-image-shift | integer(MIN:MAX) | MAY | MAY | [ipp-prod-print] |

# 3 Subscription Template attributes for Event Notification

Table 4 lists the Subscription Template attributes used in the Job Creation operations: Print-Job, Print-URI, and Create-Job. Subscription Template attributes are OPTIONAL a client to supply in a Job Creation request. Event Notification is OPTIONAL for a Printer to support. However, if a Printer supports Event Notification, the Conformance section indicates the required support of the Subscription Template attributes.

**Table 4 - Subscription Template attributes for Event Nofication**

| Job Template attribute | Attribute Syntax | Conformance | | Reference |
|---|---|---|---|---|
| | | Client supply | Printer support | |
| notify-recipient-uri * | uri | MUST * | MUST * | [ipp-ntfy] |
| notify-pull-method ** | type2 keyword | MUST ** | MUST ** | [ipp-ntfy] |
| notify-events | 1setOf type2 keyword | MAY | MUST | [ipp-ntfy] |
| notify-attributes | 1setOf type2 keyword | MAY | MAY | [ipp-ntfy] |
| notify-user-data | octetString(63) | MAY | MUST | [ipp-ntfy] |
| notify-charset | charset | MAY | MUST | [ipp-ntfy] |
| notify-natural-language | naturalLanguage | MAY | MUST | [ipp-ntfy] |
| notify-lease-duration | integer(0:MAX) | MAY | MUST | [ipp-ntfy] |
| notify-time-interval | integer(0:MAX) | MAY | MUST | [ipp-ntfy] |

* "notify-recipient-uri" is for Push Delivery Methods only.

** "notify-pull-method" is for Pull Delivery Methods only.

# 4 Job Description attributes

Table 5 lists the Job Description attributes. Job Description attributes are Job object attributes filled in by the Printer. Some Job Description attribute values are supplied by the client in the Job Creation operation using corresponding Operation attributes as indicated in the column labeled "Client supplies the value in the corresponding Operation Attribute?" The Printer conformance is indicated along with the reference to the specification in which the attribute is defined.

**Table 5 - Job Description attributes**

| IPP/CPSS/XPIF Attribute Name | IPP Data Type and Values | Client supplies the value in the corresponding Operation Attribute? | Printer conformance | Reference |
|---|---|---|---|---|
| **attributes-charset** | charset | MUST | MUST | [RFC2911] |
| **attributes-natural-language** | naturalLanguage | MUST | MUST | [RFC2911] |
| **compression** | (type3 keyword) | MAY | MUST | [RFC2911] |
| **current-page-order** | type2 keyword | | MAY | [ipp-prod-print] |
| **date-time-at-completed** | dateTime | | MAY | [RFC2911] |
| **date-time-at-creation** | dateTime | | MAY | [RFC2911] |
| **date-time-at-processing** | dateTime | | MAY | [RFC2911] |
| **document-format** | documentFormat | MAY | MUST | [RFC2911] |
| **document-name** | name(MAX) | MAY | MUST | [RFC2911] |
| **document-natural-language** | naturalLanguage | MAY | MAY | [RFC2911] |
| **impressions-completed-current-copy** | integer(0:MAX) | | MAY | [ipp-job-prog] |
| **job-collation-type** | type2 enum | | MAY | [ipp-job-prog] |
| **job-detailed-status-message** | 1setOf text (MAX) | | MAY | [RFC2911] |
| **job-document-access-errors** | 1setOf text(MAX) | | MAY | [RFC2911] |
| **job-id** | integer(1:MAX) | | MUST | [RFC2911] |
| **job-impressions** | integer(0:MAX) | MAY | MAY | [RFC2911] |
| **job-impressions-completed** | integer(0:MAX) | | MAY | [RFC2911] |
| **job-k-octets** | integer(0:MAX) | MAY | MAY | [RFC2911] |
| **job-k-octets-processed** | integer(0:MAX) | | MAY | [RFC2911] |
| **job-media-sheets** | integer(0:MAX) | MAY | MAY | [RFC2911] |
| **job-media-sheets-completed** | integer(0:MAX) | | MAY | [RFC2911] |
| **job-message-from-operator** | text(127) | | | [RFC2911] |
| **job-message-to-operator** | text(MAX) | MAY | MAY | [RFC2911] |
| **job-more-info** | uri | | MAY | [RFC2911] |
| **job-name** | name(MAX) | MAY | MUST | [RFC2911] |

| IPP/CPSS/XPIF Attribute Name | IPP Data Type and Values | Client supplies the value in the corresponding Operation Attribute? | Printer conformance | Reference |
|---|---|---|---|---|
| **job-originating-user-name** | name (MAX) | MAY (MAY from "requesting user name") | MUST | [RFC2911] |
| **job-printer-up-time** | integer (1:MAX) | | MUST | [RFC2911] |
| **job-printer-uri** | uri | MUST (from "printer-uri") | MUST | [RFC2911] |
| **job-state** | type1 enum | | MUST | [RFC2911] |
| **job-state-message** | text(MAX) | | MAY | [RFC2911] |
| **job-state-reasons** | 1setOf type2 keyword | | MUST | [RFC2911] |
| **job-uri** | uri | | MUST | [RFC2911] |
| **job-warnings-count** | integer(0:MAX) | | MAY | [ipp-override] |
| **number-of-documents** | integer(0:MAX) | | MAY | [RFC2911] |
| **number-of-intervening-jobs** | integer(0:MAX) | | MAY | [RFC2911] |
| **output-device-assigned** | name(127) | | MAY | [RFC2911] |
| **sheet-completed-copy-number** | integer(0:MAX) | | MAY | [ipp-job-prog] |
| **sheet-completed-document-number** | integer(0:MAX) | | MAY | [ipp-job-prog] |
| **time-at-completed** | integer (MIN:MAX) | | MUST | [RFC2911] |
| **time-at-creation** | integer (MIN:MAX) | | MUST | [RFC2911] |
| **time-at-processing** | integer (MIN:MAX) | | MUST | [RFC2911] |

# 5 References

[ipp-coll]
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