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Candidate Standard 5100.2-2001

The Printer Working Group

Internet Printing Protocol (IPP): "output-bin" attribute extension

Status: Approved

Abstract: This document defines an extension to the Internet Printing Protocol/1.0 (IPP/1.0) [RFC2566, RFC2565] & IPP/1.1 [RFC2911, RFC2910] for the OPTIONAL "output-bin" (type2 keyword | name(MAX)) Job Template attribute. This attribute allows the client to specify in which output bin a job is to be placed and to query the Printer's default and supported output bins.

This document is a PWG Candidate Standard. For a definition of a "PWG Candidate Standard", see:
ftp://ftp.pwg.org/pub/pwg/general/pwg-process20.pdf
This document is available electronically at:
ftp://ftp.pwg.org/pub/pwg/candidates/cs-ippoutputbin10-20010207-5100.2.pdf, .doc, .rtf

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

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IPP Web Page: http://www.pwg.org/ipp IPP Mailing List: ipp@pwg.org

Instructions for subscribing to the IPP mailing list can be found at the following link: http://www.pwg.org/mailhelp.html

Members of the PWG and interested parties are encouraged to join the PWG and IPP WG mailing lists in order to participate in discussions, clarifications and review of the WG product.

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1 Introduction

1.1 Problem

Many printers have multiple output bins, that the job submission protocol permits the submitter to select in which to put the entire job.

1.2 Solution

Add a single-valued “output-bin” Job Template attribute that captures existing practice. Allow keywords with an integer values component, so that the number of output bins is not constrained. Do not specify internal mechanisms, such as collators. Do specify an externally accessible stacker, since current devices allow a user to select a stacker. Do not make the attribute multi-valued. Add the corresponding Job Template Printer attributes: “output-bin-default” and “output-bin-supported”.

Note: If it is desired to allow the job submitter to select several output bin mail boxes that can be identified by number or recipient’s name, propose a separate multi-valued attribute. Since the destination may also be electronic and have a method associated with it, also allow the uri attribute syntax. Probably call this other attribute “output-destination” with an attribute syntax of (1setOf uri | name). Or possibly the output-destination should be a parameter on the URL? If both “output-bin” and “output-destination” are specified, the job is both printed and sent to the specified destination. This note is provided so that the “output-bin” attribute will not suffer “scope creep” during the review and be changed into “output-destination”. Printers have been allowing something like the “output-bin” specification for many years. Supporting something like “output-destination” is just starting to appear now.

1.3 Summary of the “output-bin” Job Template attribute

Job Attribute	Printer: Default Value Attribute	Printer: Supported Values Attribute
output-bin (type2 keyword | name(MAX))	output-bin-default (type2 keyword | name(MAX))	output-bin-supported (1setOf (type2 keyword | name(MAX)))

2 Definition of the “output-bin” Job Template attribute

2.1 output-bin (type2 keyword | name(MAX))

This Job Template attribute identifies the device output bin to which the job is to be delivered. There are standard values whose attribute syntax is ‘keyword’, but there are no standard values whose attribute

syntax is ‘name’. Output bins whose attribute syntax is ‘name’, if any, are assigned by local administrators (by means outside the scope of IPP/1.0 and IPP/1.1).

Each output bin may have implementation-dependent properties. Output bins identified by ‘name’ values MAY possess any of the properties of the output bins identified by the following keywords, depending on implementation. However, each output bin MUST be identified by only one value of any attribute syntax type. Otherwise, clients might be mis-led as to the capabilities of the device when querying the associated Printer object’s “output-bin-supported” attribute.

Note: Output bin types, such as sorter(s) or collator(s), have not been included in the values of this attribute, since implementations that employ such internal or external bins, determine which to use by the values of other job attributes, such as “finishings”, and “copies”.

When validating a job in a Job Creation (or Validate-Job) operation, which subset of the output bins are allowed as a destination for a job MAY depend on the user submitting that job, the user’s authentication, and possibly other job attributes, such as “finishings” and “copies”. When returning the values of the associated “output-bin-supported” attribute, the values returned MAY depend on the user issuing the Get-Printer-Attributes operation. For example, some implementations MAY omit the ‘my-mailbox’ value for users who do not have a defined mailbox for this IPP Printer object, while others MAY always return ‘my-mailbox’ to all users even if only supported for certain users.

If this IPP Printer object is associated with multiple devices (fan-out) (see [RFC2911] section 2.1), the value of its “output-bin-supported” attribute is the union of the values supported with duplicates removed.

Standard keyword values are:

‘top’: The output-bin that, when facing the device, is best identified as the “top” bin with respect to the device.

‘middle’ The output-bin that, when facing the device, is best identified as the “middle” bin with respect to the device.

‘bottom’ The output-bin that, when facing the device, is best identified as the “bottom” bin with respect to the device.

‘side’ The output-bin that, when facing the device, is best identified as the “side” bin with respect to the device.

‘left’ The output-bin that, when facing the device, is best identified as the “left” bin with respect to the device.

‘right’ The output-bin that, when facing the device, is best identified as the “right” bin with respect to the device.

‘center’ The output-bin that, when facing the device, is best identified as the “center” bin with respect to the device.

‘rear’: The output-bin that, when facing the device, is best identified as the “rear” bin with respect to the device.

‘face-up’ The output-bin that is best identified as the “face-up” bin with respect to the device. The selection of this output bin does not cause output to be made face-up; rather this output bin is given this name because a sheet with printing on one-side arrives in the output bin in the face-up position.

‘face-down’ The output-bin that is best identified as the “face-down” bin with respect to the device. The selection of this output bin does not cause output to be made face-down; rather this output bin is given this name because a sheet with printing on one-side arrives in the output bin in the face-down position.

‘large-capacity’ The output-bin that is best identified as the “large-capacity” bin (in terms of the number of sheets) with respect to the device.

‘stacker-*N*’: The output-bin that is best identified as the stacker with values ‘stacker-1’, ‘stacker-2’, ... A stacker is typically used to collate sheets within a single document (not to be confused with collated copies in which document copies are collated within a job - see the description of the ‘separate-documents-collated-copies’ value of the “multiple-document-handling” attribute in [RFC2911] section 4.2.4). The correspondence between the ‘stacker-*N*’ keyword and the actual stacker in the device is implementation-dependent, as is the number of stackers. If this group of values is supported, at least the ‘stacker-1’ value MUST be supported, unless the system administrator has assigned names.

For client implementations that require distinct keywords for each possible value, say, for localization purposes, it is recommended for interoperability with other vendor’s Printer implementations that ‘stacker-1’ to ‘stacker-10’ keywords be represented.

‘mailbox-*N*’: The output-bin that is best identified as a mailbox with values ‘mailbox-1’, ‘mailbox-2’, ‘mailbox-3’, …. Each mailbox is typically used to collect jobs for an individual or group. Whether the mailbox has doors and/or locks or is open, depends on implementation. The correspondence between the ‘mailbox-*N*’ keyword and the actual output-bin in the device is implementation-dependent, as is the number of mailboxes. A system administrator MAY be able to assign a name to each mailbox in order to make selection of a mailbox easier for the user. If this group of values is supported, at least the ‘mailbox-1’ value MUST be supported, unless the system administrator has assigned names or integer values to mailboxes.

For client implementations that require distinct keywords for each possible value, say, for localization purposes, it is recommended for interoperability with other vendor’s Printer implementations that ‘mailbox-1’ to ‘mailbox-25’ keywords be represented.

‘my-mailbox’: The output-bin that is best identified as functioning like a private “mailbox” with respect to the device. An output-bin functions like a private mailbox if a printer selects the actual output bin using additional implementation-dependent criteria, such as the “authenticated user” (see [RFC2911] section 8.3) that depends on the user submitting the job. Whether the mailbox has doors and/or locks or is open, depends on implementation, as is the number of mailboxes.

‘tray-*N*’: Output bins that are best identified as ‘tray-1’, ‘tray-2’, ... rather than the descriptive names defined in the above keyword list.

3 Conformance Requirements

The Printer and client conformance requirements for supporting this attribute are the same as for any Job Template attribute (see [RFC2911]).

4 IANA Considerations

The “output-bin” attribute defined in this document will be published by IANA according to the procedures in RFC 2911 [RFC2911] section 6.2 with the following path:

http://www.iana.org/assignments/ipp-registrations

The registry entry will contain the following information:

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Reference:
ftp://ftp.pwg.org/pub/pwg/candidates/cs-ippoutputbin10-20010207-5100.2.pdf

Job Template attributes:                                    Section:
output-bin (type2 keyword | name(MAX))                        2.1
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5 Internationalization Considerations

Normally a client will provide localization of the keywords values of this attribute to the language of the user, but will not localize the name values (see [RFC2911] section 4.1.2 and 4.1.3). The numeric form for the output bin may be simpler for a client to localize.

6 Security Considerations

The ‘my-mailbox’ attribute requires some form of Client Authorization to be really secure. See [RFC2911] section 8.

7 References

[RFC2565]

Herriot, R., Butler, S., Moore, P., and R. Turner, “Internet Printing Protocol/1.0: Encoding and Transport”, RFC 2565, April 1999.

[RFC2566]

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

[RFC2910]

Herriot, R., Butler, S., Moore, P., Turner, R., and J. Wenn, "Internet Printing Protocol/1.1: Encoding and Transport", RFC 2910, September 2000.

[RFC2911]

Hastings, T., Herriot, R., deBry, R., Isaacson, S., and P. Powell, "Internet Printing Protocol/1.1: Model and Semantics", RFC 2911, September 2000.

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9 Appendix A: Summary of other IPP documents

The full set of IPP documents includes:

Design Goals for an Internet Printing Protocol [RFC2567]
Rationale for the Structure and Model and Protocol for the Internet Printing Protocol [RFC2568]
Internet Printing Protocol/1.1: Model and Semantics [RFC2911]
Internet Printing Protocol/1.1: Encoding and Transport [RFC2910]
Internet Printing Protocol/1.1: Implementer’s Guide [IPP-IIG]
Mapping between LPD and IPP Protocols [RFC2569]

The “Design Goals for an Internet Printing Protocol” document takes a broad look at distributed printing functionality, and it enumerates real-life scenarios that help to clarify the features that need to be included in a printing protocol for the Internet. It identifies requirements for three types of users: end users, operators, and administrators. It calls out a subset of end user requirements that are satisfied in IPP/1.0. A few OPTIONAL operator operations have been added to IPP/1.1.

The “Rationale for the Structure and Model and Protocol for the Internet Printing Protocol” document describes IPP from a high level view, defines a roadmap for the various documents that form the suite of IPP specification documents, and gives background and rationale for the IETF working group’s major decisions.

The “Internet Printing Protocol/1.1: Encoding and Transport” document is a formal mapping of the abstract operations and attributes defined in the model document onto HTTP/1.1 [RFC2616]. It defines the encoding rules for a new Internet MIME media type called “application/ipp”. This document also defines the rules for transporting over HTTP a message body whose Content-Type is “application/ipp”. This document defines a new scheme named ‘ipp’ for identifying IPP printers and jobs.

The “Internet Printing Protocol/1.1: Implementer’s Guide” document gives insight and advice to implementers of IPP clients and IPP objects. It is intended to help them understand IPP/1.1 and some of the considerations that may assist them in the design of their client and/or IPP object implementations. For example, a typical order of processing requests is given, including error checking. Motivation for some of the specification decisions is also included.

The “Mapping between LPD and IPP Protocols” document gives some advice to implementers of gateways between IPP and LPD (Line Printer Daemon) implementations.

