June 9, 2017
White Paper

The Printer Working Group

IPP Presets
(PRESET)

Status: Interimitial

Abstract: This document is a whitepaper that describes IPP PresetSettings Triggers, a mechanism that enables a seto allow the selection of job template attribute values to be set as a set, to provide IPP print solutions with a way to support a variety of user experience opone setting choice to cause other related settings choices to be chosen at the same timizationse.

This document is a White Paper. For a definition of a "White Paper", see: http://ftp.pwg.org/pub/pwg/general/pwg-process30.pdf

This document is available electronically at:

https://ftp.pwg.org/pub/pwg/ipp/whitepaper/tb-ipp-preset-20170609.odt
https://ftp.pwg.org/pub/pwg/ipp/whitepaper/tb-ipp-preset-20170418.odt
https://ftp.pwg.org/pub/pwg/ipp/whitepaper/tb-ipp-preset-20170609.pdf
https://ftp.pwg.org/pub/pwg/ipp/whitepaper/tb-ipp-preset-20170418.pdf

Title: IPP Presets *(PRESET)*

The Printer Working Group

Working Group. The material contained herein is provided on an “AS IS” basis and to the maximum extent permitted by applicable law, this material is provided AS IS AND WITH ALL FAULTS, and the authors and developers of this material and the Printer Working Group and its members hereby disclaim all warranties and conditions, either expressed, implied or statutory, including, but not limited to, any (if any) implied warranties that the use of the information herein will not infringe any rights or any implied warranties of merchantability or fitness for a particular purpose.

Table of Contents

List of Figures

List of Tables

1 Introduction

This whitepaper defines a system of new IPP attributes that allow a Printer to describe a set of one or more “presets”, which are a set of job template attributes and attribute values that are applied together as a group. Each preset set has a named label and may also have an associated “trigger”, allowing the preset to be applied in response to some initial user selection.

~~This whitepaper introduces the notion of settings groups or “presets” to the IPP protocol and ecosystem.~~

Terminology

1.1 Protocol Roles Terminology

This document defines the following protocol roles in order to specify unambiguous conformance requirements:

Client: Initiator of outgoing IPP session requests and sender of outgoing IPP operation requests (Hypertext Transfer Protocol -- HTTP/1.1 [RFC7230] User Agent).

Printer: Listener for incoming IPP session requests and receiver of incoming IPP operation requests (Hypertext Transfer Protocol -- HTTP/1.1 [RFC7230] Server) that represents one or more Physical Devices or a Logical Device.

1.2 Other Terms Used in This Document

User: A person or automata using a Client to communicate with a Printer.

1.3 Acronyms and Organizations

IANA: Internet Assigned Numbers Authority, http://www.iana.org/

IETF: Internet Engineering Task Force, http://www.ietf.org/

ISO: International Organization for Standardization, http://www.iso.org/

PWG: Printer Working Group, http://www.pwg.org/

2 Rationale for IPP Presets

There are circumstances where a number of settings are chosen as a set to achieve some common printing objective or workflow scenario. For example, the act of selecting a 4”x6” media size implies the desire to print photos. If doing so could trigger the automatic selection of an associated group of settings (change media type to glossy photo, setting the print quality to 'best'), that could have a positive user experience benefit. Sometimes these groups of settings are referred to as “presets”.

Most vendor / model-specific drivers and driver system implement support for such associations, but they do this by including logic in the driver itself. For driverless / omni-driver systems such as IPP Everywhere, some settings collections could be constructed on the Client system, but some could originate from the Printer. IPP needs to be extended to provide attributes to convey these from the Printer to a Client to support Printer-originated “presets”, to support the use cases below.

There is currently no way for the Printer to supply explicit preset information to the Client. Preset information can be configured by admin, operator, or vendor. A crude facility could be provided using Validate-Job and the “job-preferred-attributes” in the response, but that requires additional Client / Printer operations that are undesirable. This should be manageable locally to the Client once the settings bundles have been provided to it by the Printer.

It is desirable that individual settings changed by the application of a preset are still able to be configurable by the User.

~~There are cases where a particular settings choice chosen by the User logically should then lead to other choices being made as well. As a simple example, if the User changes the selected media size to 4”x6”, that size is usually used with a particular photo media type, and also typically implies setting the print quality to 'best'. There is currently no mechanism in IPP to create associations between these related settings. This leaves the burden on the User to make all these changes, which visually may be in different panels in a print dialog.~~

Use Cases

Provide use cases for the document in subsections using the casual use case format.

2.1.1 Explicit Preset~~Photo Media~~ Select~~ioned~~

Bert has found a good recipe for gazpacho on the Web, and wants to print the recipe to put it into his recipe binder. He clicks on the “Print” button in the web page. When the print dialog is presented, he selects the settings preset labeled “Recipe for binder” in his print dialog, that selects “2 pages per sheet” and disables two-sided printing all at once. He prints the recipe, cuts it to size, and puts it into his recipe binder.

2.1.2 Implicit Preset Selection

Kelli is in the process of printing a photo. In the print dialog, she switches the selected media from A4 to 4”x6”. The Printer has indicated that the 4”x6” media size is associated with a glossy photo media type, single-sided printing, and 'best' print quality. The Client updates the print dialog and the job ticket automatically to include~~to reflect~~ those changes. Kelli is pleased that these choices were made automatically by her system, saving her time and effort.

2.2 Exceptions

There are no exceptions.

~~Provide exceptions for the use cases using the casual use case format.~~

Out of Scope

The following are considered out of scope for this document:

1. User presentation of these options
2. Changes to the core IPP specifications

2.3 Design Requirements

The design requirements for this document are:

1. Define new IPP attributes~~extensions~~ to specify groups of attributes and ~~IPP to allow a collection of~~ attribute values t~~o be specified t~~hat will be applied~~chosen~~ as a group when either a particular attribute value is chosen ~~as a “trigger”, or as a named “preset group”~~.
2. Support the specification of a “trigger” attribute value in the group, to support implicit group selection.
3. Support the specification of a “label” or “label key” in the group, to support explicit group selection via a name presented to the user, that might be localized.
4. ~~Define a container for those collections~~
5. Register all attributes and operations with IANA

3 Technical Solutions/Approaches

This specification defines the following: an IPP attribute that creates an association between a set of Job Template attribute names and values (a “preset”); define ancillary member attributes to uniquely identify each preset set and allow a Client to support explicit named selection of a set; and also define a mechanism that a Client can use to cause an implicit selection of a preset set.

~~This white paper defines the "preset-col" attribute, that specifies a group of attributes and attribute values with an associated label and "trigger", whose match causes the group of attribute values to be applied. This is functionally similar to the "job-constraints-supported" and "job-resolvers-supported" attributes [PWG5100.13], but the latter attributes don't appear to meet all the needs of this application. The "job-constraints-supported" attribute lacks a named label, which could be added, but isn't really applicable to the "constraints / resolvers" system. Additionally, there is a risk that Clients that support IPP constraints might not support the use of IPP constraints in this "positive constraint" manner.~~

4 ~~Printer Description Attributes~~

"job-presets-supported-~~col~~" (1setOf collection)

The "job-presets-supported" attribute provides a set of collections, where each collection consists of a "preset-key (keyword | name(MAX))" attribute and a group of attribute names and values, to be applied all at once by the Client. Each "preset-key" MUST be unique within a "job-presets-supported" attribute, so that a particular preset can be unambiguously referenced by that "preset-key". A localized string label for "preset-key" suitable for User presentation SHOULD be made available by the Printer. A Client can acquire the label by using the value of "preset-key" as the lookup key in the strings catalog provided at the URL specified by "printer-strings-uri" [PWG5100.13].

The attribute names and values MUST be supported by the Printer and be listed in its Printer Description attributes. The set of attribute values MUST NOT be in conflict with one another as described by a constraint in "job-constraints-supported".

A Printer MUST support the "job-presets-supported" attribute if it supports the "job-triggers-supported" attribute.

~~The "preset-col" attribute is a collection attribute that specifies a group of attributes and/or attribute values to be declared. This group can have a label or name that may be localized for user presentation. The group can also specify a "trigger", which is a single attribute and value. If a supporting Client detects that the User has selected this attribute value, that triggers the application of the other values to their corresponding attributes in the current job ticket.~~

~~Error: Reference source not found lists the "preset-col" member attributes. The order of values supplied in the "finishings-col" attribute is not significant.~~

Member Attribute	Client Support	Printer Support
preset-label (name(MAX))		
preset-trigger (collection)		
preset-attribute-values (collection)		

Table 1 : "preset-col" Member Attributes and support requirements

4.1.1 "preset-label" (name(MAX))

The "preset-label" member attribute provides a non-localized name for the "preset-col" collection. The value SHOULD be unique to allow Clients to localize them using the language-specific strings file referenced by the "printer-strings-uri" Printer attribute [PWG5100.13]. It SHOULD be descriptive so that it might be used without localization.

4.1.2 "preset-trigger" (collection)

The "preset-trigger" member attribute is an optional member attribute of "preset-col". The "preset-trigger" attribute is a collection that specifies the attribute name and value that can trigger the selection of this preset. Each collection consists of a "preset-trigger-name (name(MAX))" member attribute plus one Job Template attributes and its value that will cause the selection of this preset. The name specified by "preset-trigger-name" MAY be localized using the value of "preset-trigger-name" as the key into the strings catalog provided at the URL specified by "printer-strings-uri" [PWG5100.13].

4.1.3 "preset-attributes" (1setOf attribute)

The "preset-attributes" member attribute is the set of attributes and values that MUST be set when this "preset-col" has been selected or its trigger has been matched.

"job-triggers-supportedpreset-col-set" (1setOf collection)

The "job-triggers-supported" attribute provides a set of collections, where each collection contains a "preset-key (keyword | name(MAX))" member attribute, along with an attribute name and value. A Client, upon detecting that that attribute has acquired that particular value, may respond by selecting the settings in the preset in "job-presets-supported" that has the matching "preset-key" value.

A Printer MAY support the "job-triggers-supported" attribute if it supports the "job-presets-supported" attribute.

The "preset-col-set" attribute is a container for conveying the set of "preset-col" collections recommended by the Printer.

Internationalization Considerations

For interoperability and basic support for multiple languages, implementations use the Universal Character Set (UCS) Transformation Format -- 8 bit (UTF-8) [RFC3629] encoding of Unicode [UNICODE] [ISO10646] and the Unicode Format for Network Interchange [RFC5198].

5 Security Considerations

There are no ~~Provide~~ security considerations specific to~~for~~ this system other than those already defined in IPP/1.1 [RFC8011] and IPP/2.0[PWG5100.12]~~document~~.

6 References

[ISO10646] "Information technology -- Universal Coded Character Set (UCS)", ISO/IEC 10646:2011

[PWG5100.12] R. Bergman, H. Lewis, I. McDonald, M. Sweet, "IPP/2.0 Second Edition", PWG 5100.12-2011, February 2011, http://ftp.pwg.org/pub/pwg/candidates/cs-ipp20-20110214-5100.12.pdf

[PWG5100.13] M. Sweet, I. McDonald, P. Zehler, "IPP: Job and Printer Extensions - Set 3 (JPS3)", PWG 5100.13-2012, July 2012, http://ftp.pwg.org/pub/pwg/candidates/cs-ippjobprinterext3v10-20120727-5100.13.pdf

[PWG5100.19] S. Kennedy, "IPP Implementor's Guide v2.0", PWG 5100.19-2015, August 2015, http://ftp.pwg.org/pub/pwg/candidates/cs-ippig20-20150821-5100.19.pdf

[RFC2817] R. Khare, S. Lawrence, “Upgrading to TLS Within HTTP/1.1”, RFC 2817, May 2000, https://www.ietf.org/rfc/rfc2817.txt

[RFC3629] F. Yergeau, “UTF-8, a transformation format of ISO 10646”, RFC 3629, November 2003, https://www.ietf.org/rfc/rfc3629.txt

[RFC5198] J. Klensin, M. Padlipsky, “Unicode Format for Network Interchange”, RFC 5198, March 2008, https://www.ietf.org/rfc/rfc5198.txt

[RFC7230] R. Fielding, J. Reschke, "Hypertext Transfer Protocol (HTTP/1.1): Message Syntax and Routing", RFC 7230, June 2014, http://www.ietf.org/rfc/rfc7230.txt

[RFC8010] M. Sweet, I. McDonald, “Internet Printing Protocol/1.1: Encoding and Transport”, RFC 8010, January 2017, https://www.ietf.org/rfc/rfc8010.txt

[RFC8011] M. Sweet, I. McDonald, “Internet Printing Protocol/1.1: Model and Semantics”, RFC 8011, January 2017, https://www.ietf.org/rfc/rfc8011.txt

[UNICODE] The Unicode Consortium, “The Unicode Standard, Version 6.2.0”, ISBN 978-1-936213-07-8, September 2012, http://www.unicode.org/versions/Unicode6.2.0/

7 Authors' Addresses

Primary authors (using Address style):

Smith Kennedy
11311 Chinden Blvd.
Boise, Idaho 83714
smith.kennedy@hp.com

The authors would also like to thank the following individuals for their contributions to this standard:

Ira McDonald – High North
Mike Sweet – Apple Inc.
~~Turanga Leela - Planet Express~~
~~Zapp Brannigan - Democratic Order of Planets~~
Change History

7.1 June 9, 2017

Updated and refactored following May 11 IPP WG teleconference

- Expanded use case descriptions
- Refactored IPP attribute definitions

7.2 April 18, 2017

Initial revision.

