IPP Presets
(PRESET)

Status: Interim

Abstract: This document is a whitepaper that describes IPP Presets, a mechanism that enables a set of Job Template attribute values to be applied as a set, to provide IPP print solutions with a way to support a variety of user experience optimizations.


This document is available electronically at:

Title: IPP Presets (PRESET)

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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 implicitly in response to the User making a particular settings selection.

2 Terminology

2.1 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.

2.2 Printing Terminology

All the printing terminology defined in IPP/1.1 Model and Semantics [RFC8011] are applicable here:

Client: Initiator of outgoing IPP session requests and sender of outgoing IPP operation requests (Hypertext Transfer Protocol (HTTP/1.1) user agent, as defined in [RFC7230]).

Document: An object created and managed by a Printer that contains description, processing, and status information. A Document object can have attached data and is bound to a single Job [PWG5100.5].

‘ipp’ URI: An IPP URI as defined in [RFC3510].

‘ipps’ URI: An IPP URI as defined in [RFC7472].

Job: An object created and managed by a Printer that contains description, processing, and status information. The Job also contains zero or more Document objects.

Logical Device: A print server, software service, or gateway that processes Jobs and either forwards or stores the processed Job or uses one or more Physical Devices to render output.
89 *Output Device*: A single Logical or Physical Device.

90 *Physical Device*: A hardware implementation of an endpoint device, e.g., a marking engine, a fax modem, etc.

92 *Printer*: Listener for incoming IPP session requests and receiver of incoming IPP operation requests (HTTP/1.1 server, as defined in [RFC7230]) that represents one or more Physical Devices or a Logical Device.

2.3 Other Terms Used in This Document

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

2.4 Acronyms and Organizations

98 *IANA*: Internet Assigned Numbers Authority, [http://www.iana.org/](http://www.iana.org/)


3 Requirements for IPP Presets

3.1 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 “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.

After the application of a preset, the Client ought to still allow a User to change individual settings. If a preset set “print-quality” to 'high' (5) and “print-color-mode” to 'color', the User should still be capable of adjusting the control for “print-quality” to set its value to 'normal' (4).

The PWG Semantic Model defined the concept of a “job ticket template”. Saved job ticket resources are similar but not exactly the same. In particular they lack the notion of a “trigger”.

3.2 Use Cases

3.2.1 Explicit Preset Selection

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. Bert decides he wants to re-enable two-sided printing, and does so. As the preset is simply a
batch application of settings, he is still free to make individual settings choices after a
preset is applied. He prints the recipe, cuts it to size, and puts it into his recipe binder.

3.2.2 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 selecting the 4”x6” media size is a
trigger to select a preset including selecting a glossy photo media type, single-sided
printing, and 'high' print quality. The Client updates the print dialog and the job ticket
automatically to include those changes. Kelli is pleased that these choices were made
automatically by her system, saving her time and effort.

3.2.3 Client Saving Preset Settings to Printer

Ernie has constructed his own IPP preset on his system named “Better Binder Recipe”,
and he would like to share it with Bert. Ernie selects that preset from a list of locally
created presets and clicks on the “Upload Preset to Printer” button. The preset is uploaded
to the Printer. When Bert next goes to print, he sees the “Better Binder Recipe” preset that
Ernie added to the Printer, and uses that for his next recipe printing tasks.

3.3 Exceptions

There are no exceptions.

3.4 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

3.5 Design Requirements

The design requirements for this document are:

1. Define new IPP attributes to specify a set of attributes and attribute values that
will be applied as a group when either a particular attribute value is chosen.
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. Register all attributes and operations with IANA
4  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.

4.1  job-presets-supported (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 the set of attribute names and values, to be applied as a set by the Client when this preset is selected by the User. 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.

4.1.1  preset-key (keyword | name(MAX))

The “preset-key” member attribute provides each collection in “job-presets-supported” with a unique string identifier. Each “preset-key” MUST be unique within a “job-presets-supported” attribute, so that each preset collection is uniquely identifiable and can be unambiguously referenced using that “preset-key” value.

A localized string label for “preset-key” suitable for User presentation SHOULD be made available by the Printer. A Client can acquire the localized string 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]. As a fallback, the “preset-key” value may be presented directly; for this reason, the “preset-key” value SHOULD be descriptive.

4.1.2  Examples

Here is an example “job-presets-supported” attribute, which includes 2 collections, described using PAPI:

```
job-presets-supported={
    preset-key="draft"
    print-quality=3
},{
    preset-key="photo"
    print-content-optimize='graphics'
    print-quality=5
}
```
4.2 “job-triggers-supported” (1setOf collection)

The “job-triggers-supported” attribute provides a set of collections, where each collection contains a “preset-key” member attribute (section 4.1.1), along with a single attribute name and set of values. A Client, upon detecting that that attribute has acquired that particular value, will apply 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.

4.2.1 Examples

Here is an example “job-triggers-supported” attribute, which includes 2 collections, described using PAPI:

```
job-triggers-supported=
    preset-key="draft"
    media-col={media-type='stationery-recycled'}
},{
    preset-key="photo"
    media-col={media-type='photographic','photographic-glossy','photographic-matte'}
}
```

In this example, if the user selects the 'stationery-recycled' media type, that will trigger the selection of the “draft” preset from “job-presets-supported”.

5 Internationalization Considerations

For interoperability and basic support for multiple languages, conforming implementations MUST support 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].

Implementations of this specification SHOULD conform to the following standards on processing of human-readable Unicode text strings, see:

- Unicode Bidirectional Algorithm [UAX9] – left-to-right, right-to-left, and vertical
- Unicode Line Breaking Algorithm [UAX14] – character classes and wrapping
- Unicode Normalization Forms [UAX15] – especially NFC for [RFC5198]
- Unicode Text Segmentation [UAX29] – grapheme clusters, words, sentences
- Unicode Identifier and Pattern Syntax [UAX31] – identifier use and normalization
Implementations of this specification are advised to also review the following informational documents on processing of human-readable Unicode text strings:

- Unicode Character Encoding Model [UTR17] – multi-layer character model
- Unicode in XML and other Markup Languages [UTR20] – XML usage
- Unicode Character Property Model [UTR23] – character properties
- Unicode Conformance Model [UTR33] – Unicode conformance basis

6 Security Considerations

The IPP extensions defined in this document require the same security considerations as defined in the IPP/1.1: Model and Semantics [RFC8011] plus additional security considerations below.

6.1 Human-readable Strings

Implementations of this specification SHOULD conform to the following standard on processing of human-readable Unicode text strings, see:


Implementations of this specification are advised to also review the following informational document on processing of human-readable Unicode text strings:

- Unicode Security FAQ [UNISECFAQ] – common Unicode security issues

7 References

7.1 Normative References


7.2 Informative References


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9 Change History

9.1 August 7, 2017
Minor clarifications and editorial changes to section 3.

9.2 July 28, 2017
Updated following IPP WG review and feedback:
- Added Printing Terminology by copy / paste from RFC 8011 section 2.2
- Incorporated Internationalization and Security Considerations content from IPP System
- Added and fixed many references
- Refactored section 4 according to the meeting minutes to include PAPI examples to better illustrate the structure, which is difficult to articulate using conventional IPP syntax (since there isn't a formal “data type” for “any attribute”

Other additions and changes:
- Added a new use case “Client Saving Preset Settings to Printer” to explore how that might be supported in IPP, and if that requires additional definitions.

9.3 June 9, 2017
Updated and refactored following May 11 IPP WG teleconference
- Expanded use case descriptions
- Refactored IPP attribute definitions

9.4 April 18, 2017
Initial revision.