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White Paper

The Printer Working Group

1
2

IPP Presets (PRESET)

3

Status: Interim

4 Abstract: This document is a whitepaper that describes IPP Presets, a mechanism that
5 enables a set of **J**job **T**emplate attribute values to be **appliedset** as a set, to provide IPP
6 print solutions with a way to support a variety of user experience optimizations.

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

9 This document is available electronically at:

10 | <https://ftp.pwg.org/pub/pwg/ipp/whitepaper/tb-ipp-preset-20170728609.odt>
11 | <https://ftp.pwg.org/pub/pwg/ipp/whitepaper/tb-ipp-preset-20170728609.pdf>

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13 Title: IPP Presets (*PRESET*)

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58 1 Introduction

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

64 2 Terminology

65 2.1 Protocol Roles Terminology

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

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

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

73 2.2 Printing Terminology

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

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

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

81 *'ipp' URI*: An IPP URI as defined in [RFC3510].

82 *'ipps' URI*: An IPP URI as defined in [RFC7472].

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

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

88 | *Output Device: A single Logical or Physical Device.*

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

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

94 | **2.3 Other Terms Used in This Document**

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

96 | **2.4 Acronyms and Organizations**

97 | *IANA:* Internet Assigned Numbers Authority, <http://www.iana.org/>

98 | *IETF:* Internet Engineering Task Force, <http://www.ietf.org/>

99 | *ISO:* International Organization for Standardization, <http://www.iso.org/>

100 | *PWG:* Printer Working Group, <http://www.pwg.org/>

101 | **3 Requirements for IPP Presets**

102 | **3.1 Rationale for IPP Presets**

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

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

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

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

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

126 | **3.2 Use Cases**

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

128 | Explicit Preset Selection

129 Bert has found a good recipe for gazpacho on the Web, and wants to print the recipe to put
130 it into his recipe binder. He clicks on the "Print" button in the web page. When the print
131 dialog is presented, he selects the settings preset labeled "Recipe for binder" in his print
132 dialog, that selects "2 pages per sheet" and disables two-sided printing all at once. Bert
133 decides he wants to re-enable two-sided printing, and does so. As the preset is simply a

134 batch application of settings, he is still free to make individual settings choices after a
135 preset is applied. He prints the recipe, cuts it to size, and puts it into his recipe binder.

136 **3.2.1 Implicit Preset Selection**

137 Kelli is in the process of printing a photo. In the print dialog, she switches the selected
138 media from A4 to 4"x6". The Printer has indicated that selecting tthe 4"x6" media size is a
139 trigger to select a preset including selectings~~associated with~~ a glossy photo media type,
140 single-sided printing, and 'high~~best~~' print quality. The Client updates the print dialog and
141 the job ticket automatically to include those changes. Kelli is pleased that these choices
142 were made automatically by her system, saving her time and effort.

143 **3.2.2 Client Saving Preset Settings to Printer**

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

149 **3.3 Exceptions**

150 There are no exceptions.

151 **3.4 Out of Scope**

152 The following are considered out of scope for this document:

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

155 **3.5 Design Requirements**

156 The design requirements for this document are:

- 157 1. Define new IPP attributes to specify a setgroups of attributes and attribute
158 values that will be applied as a group when either a particular attribute value is
159 chosen.
- 160 2. Support the specification of a "trigger" attribute value in the group, to support
161 implicit group selection.
- 162 3. Support the specification of a "label" or "label key" in the group, to support
163 explicit group selection via a name presented to the user, that might be
164 localized.
- 165 4. Register all attributes and operations with IANA

166 4 Technical Solutions/Approaches

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

172 4.1 “job-presets-supported” (1setOf collection)

173 The “job-presets-supported” attribute provides a set of collections, where each collection
174 consists of a “preset-key (keyword | name(MAX))” attribute and ~~the set~~ a group of attribute
175 names and values, ~~to be applied as a set at once~~ by the Client ~~when this~~. ~~Each “preset is~~
176 ~~selected by the User. The attribute names and values -key” MUST be supported by the~~
177 ~~Printer and be listed in its Printer Description unique within a “job-presets-supported”~~
178 ~~attributes. The set of attribute values MUST NOT, so that a particular preset can be in~~
179 ~~conflict with one another as described unambiguously referenced by a constraint in “job-~~
180 ~~constraints-supported” that “preset-key”. A localized string label for “preset-key” suitable for~~
181 ~~User presentation SHOULD be made available by the Printer. A Client can acquire the~~
182 ~~label by using the value of “preset-key” as the lookup key in the strings catalog provided at~~
183 ~~the URL specified by “printer-strings-uri” [PWG5100.13].~~

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

187 A Printer MUST support the “job-presets-supported” attribute if it supports the “job-triggers-
188 supported” attribute.

189 4.1.1 preset-key (keyword | name(MAX))

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

194 ~~A localized string label for “preset-key” suitable for User presentation SHOULD be made~~
195 ~~available by the Printer. A Client can acquire the localized string label by using the value of~~
196 ~~“preset-key” as the lookup key in the strings catalog provided at the URL specified by~~
197 ~~“printer-strings-uri” [PWG5100.13]. As a fallback, the “preset-key” value may be presented~~
198 ~~directly; for this reason, the “preset-key” value SHOULD be descriptive.~~

199 4.1.2 Examples

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


```

202 |     job-presets-supported={
203 |             preset-key="draft"
204 |             print-quality=3
205 |     }, {
206 |             preset-key="photo"
207 |             print-content-optimize='graphics'
208 |             print-quality=5
209 |     }

```

210 | 4.2 “job-triggers-supported” (1setOf collection)

211 | The “job-triggers-supported” attribute provides a set of collections, where each collection
 212 | contains a “preset-key ~~(keyword | name(MAX))~~” member attribute (section 4.1.1), along
 213 | with a single attribute name and set of values. Client, upon detecting that that attribute
 214 | has acquired that particular value, will apply may respond by selecting the settings in the
 215 | preset in “job-presets-supported” that has the matching “preset-key” value.

216 | A Printer MAY support the “job-triggers-supported” attribute if it supports the “job-presets-
 217 | supported” attribute.

218 | 4.2.1 Examples

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

```

221 |     job-triggers-supported={
222 |             preset-key="draft"
223 |             media-col={media-type='stationery-recycled'}
224 |     }, {
225 |             preset-key="photo"
226 |             media-col={media-type='photographic', 'photographic-
227 |         glossy', 'photographic-matte'}
228 |     }

```

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

231 | 5 Internationalization Considerations

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

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

- 238 | • [Unicode Bidirectional Algorithm \[UAX9\] – left-to-right, right-to-left, and vertical](#)
- 239 | • [Unicode Line Breaking Algorithm \[UAX14\] – character classes and wrapping](#)
- 240 | • [Unicode Normalization Forms \[UAX15\] – especially NFC for \[RFC5198\]](#)
- 241 | • [Unicode Text Segmentation \[UAX29\] – grapheme clusters, words, sentences](#)
- 242 | • [Unicode Identifier and Pattern Syntax \[UAX31\] – identifier use and normalization](#)
- 243 | • [Unicode Collation Algorithm \[UTS10\] – sorting](#)
- 244 | • [Unicode Locale Data Markup Language \[UTS35\] – locale databases](#)
- 245 | [Implementations of this specification are advised to also review the following informational](#)
- 246 | [documents on processing of human-readable Unicode text strings:](#)
- 247 | • [Unicode Character Encoding Model \[UTR17\] – multi-layer character model](#)
- 248 | • [Unicode in XML and other Markup Languages \[UTR20\] – XML usage](#)
- 249 | • [Unicode Character Property Model \[UTR23\] – character properties](#)
- 250 | • [Unicode Conformance Model \[UTR33\] – Unicode conformance basis](#)

251 | **6 Security Considerations**

252 | [The IPP extensions defined in this document require the same security considerations as](#)
253 | [defined in the IPP/1.1: Model and Semantics \[RFC8011\] plus additional security](#)
254 | [considerations below .](#)

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

257 | [Human-readable Strings](#)

258 | [Implementations of this specification SHOULD conform to the following standard on](#)
259 | [processing of human-readable Unicode text strings, see:](#)

- 260 | • [Unicode Security Mechanisms \[UTS39\] – detecting and avoiding security attacks](#)

261 | [Implementations of this specification are advised to also review the following informational](#)
262 | [document on processing of human-readable Unicode text strings:](#)

- 263 | • [Unicode Security FAQ \[UNISECFAQ\] – common Unicode security issues](#)

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347 | standard:

348 | Ira McDonald – High North
349 | Mike Sweet – Apple Inc.

350 **9 Change History**

351 **9.1 July 28, 2017**

352 Updated following IPP WG review and feedback:

- 353 • Added Printing Terminology by copy / paste from RFC 8011 section 2.2
- 354 • Incorporated Internationalization and Security Considerations content from IPP
355 System
- 356 • Added and fixed many references
- 357 • Refactored section 4 according to the meeting minutes to include PAPI examples to
358 better illustrate the structure, which is difficult to articulate using conventional IPP
359 syntax (since there isn't a formal "data type" for "any attribute")

360 Other additions and changes:

- 361 • Added a new use case "Client Saving Preset Settings to Printer" to explore how that
362 might be supported in IPP, and if that requires additional definitions.

363 **9.2 June 9, 2017**

364 Updated and refactored following May 11 IPP WG teleconference

- 365 • Expanded use case descriptions
- 366 • Refactored IPP attribute definitions

367 **9.3 April 18, 2017**

368 Initial revision.