



October 10, 2017
IPP Registration

The Printer Working Group

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IPP Presets (PRESET)

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Status: ~~Stable~~Interim

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Abstract: This ~~registration 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.

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

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This ~~registration document~~ is available electronically at:

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~~<https://ftp.pwg.org/pub/pwg/ipp/whitepaper/tb-ipp-preset-20171010.odt>~~

~~<https://ftp.pwg.org/pub/pwg/ipp/whitepaper/tb-ipp-preset-20170912.odt>~~

~~<https://ftp.pwg.org/pub/pwg/ipp/whitepaper/tb-ipp-preset-20171010.pdf>~~

~~<https://ftp.pwg.org/pub/pwg/ipp/whitepaper/tb-ipp-preset-20170912.pdf>~~

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Title: IPP Presets (*PRESET*)

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74 1 Introduction

75 This ~~registration whitepaper~~ defines a system of new IPP attributes that allow a Printer to
76 describe a set of one or more IPP Presets. ~~A Preset here refers to a “presets”, which are a~~
77 ~~set of job template attributes and attribute values that are all applied together as a group.~~
78 ~~Each preset set has a named label and may also have an associated “trigger”, allowing the~~
79 ~~preset to be applied implicitly in response to the User making a particular settings~~
80 ~~selection.~~

81 2 Terminology

82 2.1 Protocol Roles Terminology

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

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

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

90 2.2 Printing Terminology

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

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

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

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

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

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

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

105 *Output Device* : A single Logical or Physical Device.

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

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

111 **2.3 Other Terms Used in This Document**

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

113 *Preset* : A set of [Job Template](#) attributes and attribute values ~~athat are a~~ applied all at once-
114 ~~as-job settings~~.

115 *Trigger* : An attribute and value whose selection causes a Preset to be selected.

116 **2.4 Acronyms and Organizations**

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

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

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

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

121 **3 Requirements for IPP Presets**

122 **3.1 Rationale for IPP Presets**

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

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

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

141 After the application of a preset, the Client should allow a User to change individual
142 settings. For example, if a preset includes "print-quality" of 'high' (5) and "print-color-mode"
143 of 'color', the Client should allow the User to change the "print-quality" to 'normal' (4).

144 The PWG Semantic Model [PWG5105.1] defined the concept of a "job ticket template".
145 Saved job ticket resources are similar but not exactly the same. In particular they lack the
146 notion of a "trigger".

147 **3.2 Use Cases**

148 **3.2.1 Explicit Preset Selection**

149 Bert has found a good recipe for gazpacho on the Web, and wants to print the recipe to put
150 it into his recipe binder. He clicks on the "Print" button in the web page. When the print
151 dialog is presented, he selects the Preset labeled "Recipe for binder". The "Recipe for
152 binder" Preset specifies "2 pages per sheet" page layout, one-sided printing, trimming and
153 punching. The Client applies the Preset to the settings in the print dialog. Bert clicks on
154 "Print"; the Client prints the Job. Bert puts it into his recipe binder.

155 **3.2.2 Implicit Preset Selection**

156 Kelli is in the process of printing a photo. In the print dialog, she switches the selected
157 media size from A4 to 4"x6". Her Client has a Trigger for 4"x6" media size that names a
158 Preset named "Photos"; the "Photos" Preset includes glossy photo media type, single-
159 sided printing, and 'high' print quality. The Client acts on the Trigger by applying the
160 settings in the "Photos" Preset. Kelli is pleased that these choices were made
161 automatically by her system, saving her time and effort.

162 **3.2.3 Client Storing a Preset to Printer**

163 Ernie has constructed his own Preset named "Better Binder Recipe", and he would like to
164 share it with Bert. Ernie selects that Preset and taps on the "Store Preset on Printer"
165 button. The preset is uploaded to the Printer. When Bert next goes to print, he sees the
166 "Better Binder Recipe" preset that Ernie added to the Printer, and uses that for his next
167 recipe printing tasks.

168 **3.3 Exceptions**

169 **3.3.1 Overriding Preset Selection**

170 Bert selects the Preset labeled "Recipe for binder" in his print dialog, that selects "2 pages
171 per sheet" page layout, one-sided printing, trimming and punching. Bert decides he wants
172 to re-enable two-sided printing, and does so using the controls in the print dialog. He prints
173 the recipe and puts it into his recipe binder, pleased that he can take advantage of the
174 power of Presets but still maintain full control over a Job's settings.

175 **3.4 Out of Scope**

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

- 177 1. The user interface for Presets
- 178 2. Changes to the core IPP specifications

179 **3.5 Design Requirements**

180 The design requirements for this document are:

- 181 1. Define new IPP attributes that describe a Preset as a set of attributes and
182 attribute values that will be applied all at once. Each Preset is to have a unique
183 name.
- 184 2. Define new IPP attributes that describe a Trigger as an attribute and value and a
185 corresponding Preset name, that operates according to the principle "if Trigger
186 attribute value is chosen, then apply Preset", to support implicit Preset selection.
- 187 3. Define sections to register all attributes, values, operations, and service types
188 with IANA.

189 4 IPP Presets Definitions

190 | ~~This specification defines IPP attributes and operations used for Presets and Triggers.~~

191 | Printer Description Attributes

192 4.1.1 job-presets-supported (1setOf collection)

193 This REQUIRED Printer Description attribute lists named Presets that are stored on the
194 Printer. Each collection value contains a REQUIRED “preset-name (keyword |
195 name(MAX))” attribute and one or more Job Template attributes that are part of the Preset.
196 The attribute names and values MUST be supported by the Printer and be listed in its
197 Printer Description attributes. The set of attribute values MUST NOT be in conflict with one
198 another as described by a constraint in “job-constraints-supported”.

199 4.1.1.1 preset-name (keyword | name(MAX))

200 This attribute provides a unique name for the Preset. Values can be localized using the
201 message catalog provided at the URL specified by the “printer-strings-uri” Printer
202 Description attribute [PWG5100.13].

203 4.1.1.2 Examples

204 Below is an example “job-presets-supported” attribute, which includes 2 collections,
205 described using PAPI notation [PAPI]:

```
206     job-presets-supported={  
207         preset-name="draft"  
208         print-quality=3  
209     }, {  
210         preset-name="photo"  
211         print-content-optimize='graphics'  
212         print-quality=5  
213     }
```

214 4.1.2 job-triggers-supported (1setOf collection)

215 This RECOMMENDED Printer Description attribute lists Triggers that are stored on the
216 Printer. Each collection value contains a REQUIRED “preset-name (keyword |
217 name(MAX))” member attribute (section 4.1.1.1) and one or more Job Template attributes
218 that are part of the Trigger.

219 4.1.2.1 Examples

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

```
222     job-triggers-supported={
223         preset-name="draft"
224         media-col={media-type='stationery-recycled'}
225     }, {
226         preset-name="photo"
227         media-col={media-type='photographic', 'photographic-
228         glossy', 'photographic-matte'}
229     }
```

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

232 **4.1.3 job-presets-storage-available (boolean)**

233 This CONDITIONALLY REQUIRED Printer Description attribute specifies whether the
234 Printer has resources available to store an additional Preset provided to it by a Client via a
235 Set-Printer-Attributes operation. This attribute is REQUIRED if a Printer supports accepting
236 Presets via a Set-Printer-Attributes operation. A Client SHOULD check this Printer
237 Description attribute before performing a Set-Printer-Attributes operation to ensure that it
238 will be more likely to succeed.

239 **4.2 Storing Presets and Triggers**

240 Presets and Triggers ~~could may~~ be constructed by a User and stored locally on the Client.
241 In some cases (as described in the use case in section 3.2.3), the Client may want to store
242 those Presets and Triggers on the Printer. A Printer MAY allow a Client to can store a
243 Preset or a Trigger on the Printer. A Client adds a Preset to a Printer using the Set-Printer-
244 Attributes operation [RFC3380].

245 If a Printer supports accepting new Presets and Triggers via a Set-Printer-Attributes
246 operation, it advertises this by listing “Set-Printer-Attributes” in its “operations-supported”
247 Printer Description attribute [RFC8011], ~~and~~ by ~~also~~ listing “job-presets-supported” and
248 “job-triggers-supported” in its “printer-settable-attributes-supported” Printer Description
249 attribute [RFC3380], and by supporting the “job-presets-storage-available” attribute
250 (section . The Printer indicates whether it can accept and store an additional Preset by
251 providing the value “true” for “job-presets-storage-available”.

252 Additionally, the Printer MUST implement the Get-Printer-Supported-Values operation
253 [RFC3380] to allow a Client to request the values that the Printer allows in the Set-Printer-
254 Attributes operation for the “job-presets- supported” and “job-triggers-supported” attributes.

255 As per section 4.1.3, a Client SHOULD check the state of the “job-presets-storage-
256 available” attribute to determine whether the Printer will accept a new Preset. If the Printer
257 rejects the Preset because it lacks the resources to store it or because it has unsupported
258 attributes or values, then the Printer MUST include the “client-error-bad-request” status
259 code in its Set-Printer-Attributes operation response.

260 | **5 Client Implementation Recommendations**

261 **5.1 Presets**

262 A Client should list available Presets by name in some manner in its UI presenting printing
263 choices. The Presets may come from the Printer or they may be created by the Client and
264 persisted in some way. When a User selects a Preset, the print settings in that Preset
265 should be applied. Implementors of Clients may want to consider what to do when a
266 setting has been changed by the user and then a Preset has been selected that might
267 change that setting. The Client might notify the User that the setting will be changed, or
268 alternately might apply the Preset but not change the setting changed by the User.

269 **5.2 Triggers**

270 The semantic expectation of a Trigger is “IF setting value is chosen, THEN apply Preset”.
271 Upon detecting that a Trigger's setting value has been chosen by the User, the Client
272 applies the Preset. Client implementors may want to consider cases where Triggers are
273 disabled, such as following manual selection by a user, or perhaps only allowing one
274 Trigger per “print dialog session” to be used.

275 A Trigger should only be applied in response to user input, and not in response to a value
276 being set by another Preset, a constraint, or some other automatic selection implemented
277 by the Client.

278 **6 Conformance Requirements**

279 **6.1 Conformance Requirements for Clients**

280 In order for a Client to claim conformance to this specification, a Client MUST support:

- 281 1. The IPP Printer attributes defined in section ;
- 282 2. The internationalization considerations in section 7;
- 283 3. The security considerations in section 8.

284 **6.2 Conformance Requirements for Printers**

285 In order for a Printer to claim conformance to this specification, a Printer MUST support:

- 286 1. The IPP Printer attributes defined in section ;
- 287 2. The internationalization considerations in section 7;
- 288 3. The security considerations in section 8.

289 **7 Internationalization Considerations**

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

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

- 296 • Unicode Bidirectional Algorithm [UAX9] – left-to-right, right-to-left, and vertical
- 297 • Unicode Line Breaking Algorithm [UAX14] – character classes and wrapping
- 298 • Unicode Normalization Forms [UAX15] – especially NFC for [RFC5198]
- 299 • Unicode Text Segmentation [UAX29] – grapheme clusters, words, sentences
- 300 • Unicode Identifier and Pattern Syntax [UAX31] – identifier use and normalization
- 301 • Unicode Collation Algorithm [UTS10] – sorting
- 302 • Unicode Locale Data Markup Language [UTS35] – locale databases

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

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

309 **8 Security Considerations**

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

313 **8.1 Human-readable Strings**

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

- 316 • Unicode Security Mechanisms [UTS39] – detecting and avoiding security attacks
- 317 Implementations of this specification are advised to also review the following informational
318 document on processing of human-readable Unicode text strings:
- 319 • Unicode Security FAQ [UNISECFAQ] – common Unicode security issues

320 9 IANA and PWG Considerations

321 9.1 Attribute Registrations

322 The attributes defined in this document will be published by IANA according to the
323 procedures in IPP Model and Semantics [RFC8011] section 6.2 in the following file:

324 <http://www.iana.org/assignments/ipp-registrations>

325 The registry entries will contain the following information:

326	Printer Description attributes:	Reference
327	-----	-----
328	job-presets-supported (1setOf collection)	[5100.PRESET]
329	preset-name (keyword name(MAX))	[5100.PRESET]
330	job-triggers-supported (1setOf collection)	[5100.PRESET]
331	preset-name (keyword name(MAX))	[5100.PRESET]
332	<u>job-presets-storage-available (boolean)</u>	<u>[5100.PRESET]</u>

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409 **11 Authors' Addresses**

410 Primary authors:

411 Smith Kennedy

412 [HP Inc.](#)

413 11311 Chinden Blvd.

414 Boise, Idaho 83714

415 smith.kennedy@hp.com

416 The authors would also like to thank the following individuals for their contributions to this
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418 Ira McDonald – High North

419 Mike Sweet – Apple Inc.

420 [Eren Rodriguez – HP Inc.](#)

421 | **12 Change History**

422 | **12.1 October 10, 2017**

423 | Updated to make the draft an IPP Registration document, and a few other modifications.

424 | **12.2 October 9, 2017**

425 | Updated to as per HP feedback:

- 426 | • Added the “job-presets-storage-available” attribute definition and semantics
- 427 | • Added additional Client considerations and Printer behavior for error conditions
- 428 | when the submitted Preset contains unsupported values or lacks resources to store
- 429 | the Preset it received

430 | **12.3 September 12, 2017**

431 Updated as per feedback from August 2017 PWG vF2F session and subsequent
432 discussion on IPP reflector:

- 433 | • Extensively updated structure of section 4 “IPP Presets Definitions”
- 434 | ◦ Added section 4.2 to discuss storing presets using Set-Printer-Attributes
- 435 | ◦ Added and then removed section 4.3 (placeholder) to discuss storing presets as
- 436 | resources, because it was decided in an ipp@pwg.org reflector discussion that
- 437 | this was not the way we wanted to go.
- 438 | • Added “Client Implementation Recommendations” section
- 439 | • Added “Conformance Requirements” section
- 440 | • Added “IANA and PWG Considerations” section

441 | **12.4 August 7, 2017**

442 | Minor clarifications and editorial changes to section 3.

443 | **12.5 July 28, 2017**

444 | Updated following IPP WG review and feedback:

- 445 | • Added Printing Terminology by copy / paste from RFC 8011 section 2.2

- 446 • Incorporated Internationalization and Security Considerations content from IPP
447 System
- 448 • Added and fixed many references
- 449 • Refactored section 4 according to the meeting minutes to include PAPI examples to
450 better illustrate the structure, which is difficult to articulate using conventional IPP
451 syntax (since there isn't a formal "data type" for "any attribute")
- 452 Other additions and changes:
- 453 • Added a new use case "Client Saving Preset Settings to Printer" to explore how that
454 might be supported in IPP, and if that requires additional definitions.

455 **12.6 June 9, 2017**

- 456 Updated and refactored following May 11 IPP WG teleconference
- 457 • Expanded use case descriptions
- 458 • Refactored IPP attribute definitions

459 **12.7 April 18, 2017**

- 460 Initial revision.