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IPP Registration

## The Printer Working Group

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### IPP Presets (PRESET)

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Status: Stable

4 Abstract: This registration describes IPP Presets, a group of Job Template attribute values  
5 applied atomically as a set, that supports a variety of user experience optimizations in IPP  
6 print solutions.

7 This registration is available electronically at:

8 <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippreset-20171108.odt>  
9 <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippreset-20171103.odt>  
10 <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippreset-20171108.pdf>  
11 <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippreset-20171103.pdf>  
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13 Title: IPP Presets (*PRESET*)

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## 74 1 Introduction

75 This registration defines IPP Presets, defined here to mean a named group of Job  
76 Template attributes and attribute values applied atomically as a set. A Printer can describe  
77 Printer-resident IPP Presets to Clients, and Clients can modify the Printer-resident IPP  
78 Presets, using the IPP attributes defined in this document.

## 79 2 Terminology

### 80 2.1 Conformance Terminology

81 Capitalized terms, such as MUST, MUST NOT, RECOMMENDED, REQUIRED, SHOULD,  
82 SHOULD NOT, MAY, and OPTIONAL, have special meaning relating to conformance as  
83 defined in Key words for use in RFCs to Indicate Requirement Levels [BCP14]. The term  
84 CONDITIONALLY REQUIRED is additionally defined for a conformance requirement that  
85 applies when a specified condition is true.

### 86 2.2 Printing Terminology

87 Normative definitions and semantics of printing terms are imported from IETF Printer MIB  
88 v2 [RFC3805], IETF Finisher MIB [RFC3806], and IETF Internet Printing Protocol/1.1:  
89 Model and Semantics [RFC8011].

90 *Document*: An object created and managed by a Printer that contains the description,  
91 processing, and status information. A Document object may have attached data and is  
92 bound to a single Job.

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

95 *Logical Device*: a print server, software service, or gateway that processes jobs and either  
96 forwards or stores the processed job or uses one or more Physical Devices to render  
97 output.

98 *Output Device*: a single Logical or Physical Device

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

### 101 2.3 Protocol Roles Terminology

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

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

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

## 109 **2.4 Printing Terminology**

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

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

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

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

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

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

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

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

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

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

## 130 **2.5 Other Terms Used in This Document**

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

132 *Preset*: A group of Job Template attributes and attribute values applied atomically as a set.

133 *Trigger*: A group of Job Template attributes and values whose selection indicates that a  
134 Preset ought to be selected.

135 **2.6 Acronyms and Organizations**

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

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

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

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

## 140 **3 Requirements for IPP Presets**

### 141 **3.1 Rationale for IPP Presets**

142 There are circumstances where a group of settings are chosen and applied as a set, to  
143 achieve some common printing objective or workflow scenario. For example, the act of  
144 selecting a 4"x6" media size might commonly imply the desire to print photos. Users  
145 benefit from a facility that automatically selects an associated group of settings (change  
146 media type to glossy photo, setting the print quality to 'best').

147 Many Clients driver system support such associations, but this facility depends on  
148 including these grouping definitions in the vendor / model-specific drivers themselves. For  
149 driverless / omni-driver systems such as IPP Everywhere™ [PWG5100.14], IPP provides  
150 the replacement for the model-specific driver. IPP needs to be extended to enable the  
151 Printer to describe its own Presets.

152 Some Client processing and behavior are important to ensure IPP Presets facilitates a  
153 good user experience. After the User selects a Preset, the Client ought to continue to allow  
154 the User to change individual settings. For example, if a Preset named "photo" includes  
155 "print-quality" of 'high' (5) and "print-color-mode" of 'color', and the User selects that Preset,  
156 the Client ought to allow the User to change the "print-quality" to some other value even  
157 after the User has selected that Preset.

### 158 **3.2 Use Cases**

#### 159 **3.2.1 Explicit Preset Selection**

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

#### 166 **3.2.2 Implicit Preset Selection**

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



### 173 **3.2.3 Client Storing a Preset to Printer**

174 Ernie has constructed his own Preset named “Better Binder Recipe”, and he would like to  
175 share it with Bert. Ernie selects that Preset and taps on the “Store Preset on Printer”  
176 button. The Preset is uploaded to the Printer. When Bert next goes to print, he sees the  
177 “Better Binder Recipe” Preset that Ernie added to the Printer, and uses that for his next  
178 recipe printing tasks.

## 179 **3.3 Exceptions**

### 180 **3.3.1 Overriding Preset Selection**

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

## 186 **3.4 Out of Scope**

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

- 188 1. The user interface for Presets
- 189 2. Changes to the core IPP specifications

## 190 **3.5 Design Requirements**

191 The design requirements for this document are:

- 192 1. Define new IPP attributes that describe a Preset as a set of attributes and  
193 attribute values that will be applied all at once. Each Preset is to have a unique  
194 name.
- 195 2. Define new IPP attributes that describe a Trigger as an attribute and value and a  
196 corresponding Preset name, that operates according to the principle “if Trigger  
197 attribute value is chosen, then apply Preset”, to support implicit Preset selection.
- 198 3. Define sections to register all attributes, values, operations, and service types  
199 with IANA.

## 200 **4 IPP Presets Definitions**

### 201 **4.1 Printer Description Attributes**

#### 202 **4.1.1 job-presets-supported (1setOf collection)**

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

209 A Client MUST copy all Preset member attributes (except “preset-name”) from the selected  
210 Preset to the Job Creation Request, either with the values from the Preset or alternate  
211 values subsequently chosen by the User. This includes member attributes that the Client  
212 does not natively support.

##### 213 **4.1.1.1 preset-name (keyword | name(MAX))**

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

##### 217 **4.1.1.2 Examples**

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

```
220     job-presets-supported={  
221         preset-name="draft"  
222         print-quality=3  
223     }, {  
224         preset-name="photo"  
225         print-content-optimize='graphics'  
226         print-quality=5  
227     }
```

#### 228 **4.1.2 job-triggers-supported (1setOf collection)**

229 This RECOMMENDED Printer Description attribute lists Triggers that are stored on the  
230 Printer. Each collection value contains a REQUIRED “preset-name (keyword |  
231 name(MAX))” member attribute (section 4.1.1.1) and one or more Job Template attributes  
232 that specify the Trigger. The Client applies the Preset named by “preset-name” once the  
233 User selects all the settings corresponding to the Job Template attributes specified in the  
234 Trigger.

### 235 4.1.2.1 Examples

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

```
238     job-triggers-supported={  
239         preset-name="draft"  
240         media-col={media-type='stationery-recycled'}  
241     }, {  
242         preset-name="photo"  
243         media-col={media-type='photographic', 'photographic-  
244         glossy', 'photographic-matte'}  
245     }
```

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

## 248 4.2 Storing Presets and Triggers

249 A User could construct Presets and Triggers, and the Client would initially store these  
250 Presets and Triggers. In some cases, such as the use case described in section 3.2.3, the  
251 User may want to store one or more of those Presets and/or Triggers on the Printer. A  
252 Client adds a Preset to a Printer using the Set-Printer-Attributes operation [RFC3380].

253 A Printer advertises its support for accepting new Presets and Triggers by: supporting the  
254 Set-Printer-Attributes and Get-Printer-Supported-Values operations; including Set-Printer-  
255 Attributes and Get-Printer-Supported-Values in its “operations-supported” Printer  
256 Description attribute [RFC8011]; including “job-presets-supported” and “job-triggers-  
257 supported” in its “printer-settable-attributes-supported” Printer Description attribute  
258 [RFC3380]; specifying via a Get-Printer-Supported-Values operation [RFC3380] response  
259 the values that the Printer allows in the Set-Printer-Attributes operation for the “job-  
260 presets-supported” and “job-triggers-supported” attributes.

## 261 5 Client Implementation Recommendations

### 262 5.1 Presets

263 A Client SHOULD list available Presets by name wherever it presents printing choices to  
264 the User. The Presets might have originated in the Printer or they might be local to the  
265 Client. When a User selects a Preset, the Client copies all Preset member attributes to the  
266 Job Creation Request.

267 Client implementors might want to consider appropriate behavior in response to the User  
268 changing a setting and then the User chooses a Preset that overrides that earlier selection.  
269 The Client could notify the User that the setting will be changed. Alternately, the Client

270 could apply the Preset but not change the setting changed by the User, or let the selected  
271 Preset overwrite the previous User selection.

## 272 **5.2 Triggers**

273 The Client applies the Preset specified by the Trigger upon detecting that the pending  
274 Job's settings values match all the Trigger's members. Client implementors may want to  
275 consider cases where Triggers are disabled, such as following manual selection by a user,  
276 or perhaps only allowing one Trigger per “print dialog session” to be used. A Trigger ought  
277 to be applied only in response to user input, and not in response to a value being set by  
278 another Preset, a constraint, or some other automatic selection implemented by the Client.

## 279 **5.3 Updating Presets in the Printer**

280 The Set-Printer-Attributes operation [RFC3380] semantic is the assignment of a new value  
281 to the specified attribute; the attribute and its value sent in the operation request will  
282 become the Printer's new attribute value if the operation is successful. For example, to add  
283 an additional Preset to a Printer's current “job-presets-supported” attribute, the Client  
284 would acquire the current value of the “job-presets-supported” attribute using a Get-  
285 Printer-Attributes operation, append or insert the new Preset collection into the set, then  
286 perform a Set-Printer-Attributes operation to apply the new set value to the Printer..

287 The result of the Set-Printer-Attributes operation will indicate whether the Printer accepts  
288 the update. If the new value is accepted, the Printer will atomically update its “job-presets-  
289 supported” attribute. If the he Printer rejects the new value for some reason, it ought to  
290 return a suitable status code indicating the underlying cause of the rejection.

## 291 **6 Conformance Requirements**

### 292 **6.1 Conformance Requirements for Clients**

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

- 294 1. The IPP Printer attributes defined in section 4.1;
- 295 2. The internationalization considerations in section 7;
- 296 3. The security considerations in section 8.

### 297 **6.2 Conformance Requirements for Printers**

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

- 299 1. The IPP Printer attributes defined in section 4.1;

- 300           2.     The internationalization considerations in section 7;  
301           3.     The security considerations in section 8.

## 302   **7    Internationalization Considerations**

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

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

- 309       • Unicode Bidirectional Algorithm [UAX9] – left-to-right, right-to-left, and vertical
- 310       • Unicode Line Breaking Algorithm [UAX14] – character classes and wrapping
- 311       • Unicode Normalization Forms [UAX15] – especially NFC for [RFC5198]
- 312       • Unicode Text Segmentation [UAX29] – grapheme clusters, words, sentences
- 313       • Unicode Identifier and Pattern Syntax [UAX31] – identifier use and normalization
- 314       • Unicode Collation Algorithm [UTS10] – sorting
- 315       • Unicode Locale Data Markup Language [UTS35] – locale databases

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

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

## 322   **8    Security Considerations**

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

## 326 8.1 Human-readable Strings

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

- 329 • Unicode Security Mechanisms [UTS39] – detecting and avoiding security attacks

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

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

## 333 9 IANA and PWG Considerations

### 334 9.1 Attribute Registrations

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

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

338 The registry entries will contain the following information:

339 Printer Description attributes:	Reference
340 -----	-----
341 job-presets-supported (1setOf collection)	[PRESET]
342     preset-name (keyword   name(MAX))	[PRESET]
343 job-triggers-supported (1setOf collection)	[PRESET]
344     preset-name (keyword   name(MAX))	[PRESET]

## 345 10 References

### 346 10.1 Normative References

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**435 11 Authors' Addresses**

436 Primary authors:

437 Smith Kennedy  
438 HP Inc.  
439 11311 Chinden Blvd.  
440 Boise, Idaho 83714  
441 smith.kennedy@hp.com

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

444 Ira McDonald – High North  
445 Mike Sweet – Apple Inc.  
446 Eren Rodriguez – HP Inc.

## 447 **12 Change History**

### 448 **12.1 November 8, 2017**

- 449 • Added missing sub-sections “Conformance Terminology” and “Printing Terminology”  
450 to section 2

### 451 **12.2 November 3, 2017**

452 Updated as per October 26, 2017 IPP WG Teleconference feedback

- 453 • Added additional Client requirements to section 4.1.1 requiring the Client to copy  
454 ALL attributes in the Preset into the Job Submission record, even those that the  
455 Client doesn't natively support, to better satisfy feedback from Canon.
- 456 • Eliminated instances of passive voice which the editor is prone to using
- 457 • Capitalized all uses of RFC 2119 normative keywords
- 458 • Other editorial changes

### 459 **12.3 October 16, 2017**

460 Updated with resolutions to feedback from October 16, 2017 IPP WG meeting

- 461 • Remove the “job-presets-storage-available” attribute definition.
- 462 • Add section 5.3 to provide guidance for implementation of Set-Printer-Attributes
- 463 • Other editorial changes

### 464 **12.4 October 10, 2017**

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

### 466 **12.5 October 9, 2017**

467 Updated to as per HP feedback:

- 468 • Added the “job-presets-storage-available” attribute definition and semantics
- 469 • Added additional Client considerations and Printer behavior for error conditions  
470 when the submitted Preset contains unsupported values or lacks resources to store  
471 the Preset it received

**472 12.6 September 12, 2017**

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

- 475 • Extensively updated structure of section 4 “IPP Presets Definitions”
  - 476 ◦ Added section 4.2 to discuss storing presets using Set-Printer-Attributes
  - 477 ◦ Added and then removed section 4.3 (placeholder) to discuss storing presets as  
478 resources, because it was decided in an [ipp@pwg.org](mailto:ipp@pwg.org) reflector discussion that  
479 this was not the way we wanted to go.
- 480 • Added “Client Implementation Recommendations” section
- 481 • Added “Conformance Requirements” section
- 482 • Added “IANA and PWG Considerations” section

**483 12.7 August 7, 2017**

484 Minor clarifications and editorial changes to section 3.

**485 12.8 July 28, 2017**

486 Updated following IPP WG review and feedback:

- 487 • Added Printing Terminology by copy / paste from RFC 8011 section 2.2
- 488 • Incorporated Internationalization and Security Considerations content from IPP  
489 System
- 490 • Added and fixed many references
- 491 • Refactored section 4 according to the meeting minutes to include PAPI examples to  
492 better illustrate the structure, which is difficult to articulate using conventional IPP  
493 syntax (since there isn't a formal “data type” for “any attribute”

494 Other additions and changes:

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

**497 12.9 June 9, 2017**

498 Updated and refactored following May 11 IPP WG teleconference

- 499 • Expanded use case descriptions
- 500 • Refactored IPP attribute definitions

501 **12.10 April 18, 2017**

502 Initial revision.