



The Printer Working Group

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IPP Registration

## IPP Presets (PRESET)

Status: IPP WG Approved

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

This registration is available electronically at:

<https://ftp.pwg.org/pub/pwg/ipp/registrations/reg-ipppreset-20171214.odt>  
<https://ftp.pwg.org/pub/pwg/ipp/registrations/reg-ipppreset-20171214.pdf>

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Title: IPP Presets (*PRESET*)

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## 1 Introduction

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

## 2 Terminology

### 2.1 Conformance Terminology

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

### 2.2 Printing Terminology

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

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

*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.

*Output Device*: a single Logical or Physical Device

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

### 2.3 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.

## 2.4 Printing Terminology

All the printing terminology defined in IPP/1.1 Model and Semantics [RFC8011] is 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.

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

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

*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.

## 2.5 Other Terms Used in This Document

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

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

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

## **2.6 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/>

## **3 Requirements for IPP Presets**

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

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

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

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

### **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 Preset labeled "Recipe for binder". The "Recipe for binder" Preset specifies "2 pages per sheet" page layout, one-sided printing, trimming and punching. The Client applies the Preset to the settings in the print dialog. Bert clicks on "Print"; the Client prints the Job. Bert 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 size from A4 to 4"x6". Her Client has a Trigger for 4"x6" media size that names a Preset named "Photos"; the "Photos" Preset includes glossy photo media type, single-sided printing, and 'high' print quality. The Client acts on the Trigger by applying the settings in the "Photos" Preset. Kelli is pleased that these choices were made automatically by her system, saving her time and effort.

### 3.2.3 Client Storing a Preset to Printer

Ernie has constructed his own Preset named “Better Binder Recipe”, and he would like to share it with Bert. Ernie selects that Preset and taps on the “Store Preset on 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

### 3.3.1 Overriding Preset Selection

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

## 3.4 Out of Scope

The following are considered out of scope for this document:

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

## 3.5 Design Requirements

The design requirements for this document are:

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



## 4 IPP Presets Definitions

### 4.1 Printer Description Attributes

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

This REQUIRED Printer Description attribute lists named Presets that are stored on the Printer. Each collection value contains a REQUIRED “preset-name (keyword | name(MAX))” attribute and one or more Job Template attributes that are part of the Preset. 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 Client MUST copy all Preset member attributes (except “preset-name”) from the selected Preset to the Job Creation Request, either with the values from the Preset or alternate values subsequently chosen by the User. This includes member attributes that the Client does not natively support.

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

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

##### 4.1.1.2 Examples

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

```
job-presets-supported={
    preset-name="draft"
    print-quality=3
}, {
    preset-name="photo"
    print-content-optimize='graphics'
    print-quality=5
}
```

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

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

### 4.1.2.1 Examples

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

```
job-triggers-supported={
    preset-name="draft"
    media-col={media-type='stationery-recycled'}
}, {
    preset-name="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”.

## 4.2 Storing Presets and Triggers

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

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

## 5 Client Implementation Recommendations

### 5.1 Presets

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

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

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

## 5.2 Triggers

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

## 5.3 Updating Presets in the Printer

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

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

# 6 Conformance Requirements

## 6.1 Conformance Requirements for Clients

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

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

## 6.2 Conformance Requirements for Printers

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

1. The IPP Printer attributes defined in section 4.1;

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

## 7 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
- Unicode Collation Algorithm [UTS10] – sorting
- Unicode Locale Data Markup Language [UTS35] – locale databases

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

## 8 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 .

## 8.1 Human-readable Strings

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

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

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

## 9 IANA and PWG Considerations

### 9.1 Attribute Registrations

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

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

The registry entries will contain the following information:

Printer Description attributes:	Reference
-----	-----
job-presets-supported (1setOf collection)	[PRESET]
preset-name (keyword   name(MAX))	[PRESET]
job-triggers-supported (1setOf collection)	[PRESET]
preset-name (keyword   name(MAX))	[PRESET]

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