



The Printer Working Group

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Message Catalog Help Extensions (HELPME)

Status: Interim

Abstract: IPP Printers provide their own localized Message Catalog files. This Best Practices document describes a convention to provide "help" content in Message Catalog files.

This is a PWG Best Practice document. For the definition of "PWG Best Practices", see:

<http://ftp.pwg.org/pub/pwg/general/pwg-process30.pdf>

This document is available electronically at:

<http://ftp.pwg.org/pub/pwg/ipp/white/wd-ipphelpme-20190528.docx>
<http://ftp.pwg.org/pub/pwg/ipp/white/wd-ipphelpme-20190528.pdf>

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27 Title: Message Catalog Help Extensions (HELPME)

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72 **1. Introduction**

73 IPP Printers provide their own localized Message Catalog files. This Best Practices
74 document describes a convention to provide "help" content in Message Catalog files.
75 Localized content packaged with software frequently includes documentation content
76 ("help") to provide the End User with assistance on using that software. This has taken
77 several forms, including "Help" documentation provided in an electronic manual format,
78 and as "contextual help" ("tooltips") that is usually provided inline, for instance hovering a
79 small overlay containing text when the End User moves their mouse pointer over a user
80 interface control.

81 **2. Terminology**

82 **2.1 Conformance Terminology**

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

88 **2.2 Printing Terminology**

89 Definitions and semantics of printing terms are imported from IETF Printer MIB v2
90 [RFC3805], IETF Finisher MIB [RFC3806], and IETF Internet Printing Protocol/1.1: Model
91 and Semantics [STD92].

92 *End User:* A person or software process that is authorized to perform basic printing
93 functions, including finding/locating a printer, creating a local instance of a printer, viewing
94 printer status, viewing printer capabilities, submitting a print job, viewing print job status,
95 and altering the attributes of a print job [RFC2567].

96 **2.3 Protocol Role Terminology**

97 This document also defines the following protocol roles in order to specify unambiguous
98 conformance requirements:

99 *Client:* Initiator of outgoing connections and sender of outgoing operation requests
100 (Hypertext Transfer Protocol -- HTTP/1.1 [RFC7230] User Agent).

101 *Printer:* Listener for incoming connections and receiver of incoming operation requests
102 (Hypertext Transfer Protocol -- HTTP/1.1 [RFC7230] Server) that represents one or more
103 Physical Devices or a Logical Device.

104 **2.4 Acronyms and Organizations**

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

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

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

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

109

110 **3. Requirements for Message Catalog Help Extensions**

111 **3.1 Rationale**

112 IPP: Job and Printer Extensions – Set 3 (JPS3) [PWG5100.13] defines the Message
113 Catalog content type ("text/strings") that defines mappings between attribute name and/or
114 value keys and localized string value equivalents, made available at a URL specified by
115 the "printer-strings-uri" Printer Description attribute.

116 End users and print system deployment administrators are increasingly demanding that
117 clients and printers support capabilities via universal print system ecosystems such as IPP
118 Everywhere™ [PWG5100.14] with feature parity approaching that of traditional model-
119 specific vendor-provided driver systems. To enable IPP to support these demands, this
120 Best Practice document should extend the Message Catalog syntax to support "tool tips"
121 and "online help" for any attribute or attribute value provided.

122 **3.2 Use Cases**

123 **3.2.1 End User Seeking Assistance on Printer Feature Use**

124 Garth has edited a photo and wants to print it to an IPP Everywhere™ printer. When
125 looking through the printer's features in the print dialog window, he discovers a feature that
126 he doesn't quite understand how to use. He clicks on the "?" button in the dialog to cause
127 the presentation of the "Help" window. The application fetches the help content from the
128 printer and presents that content for the controls currently visible in the Help window. Garth
129 reads the presented content and gains an understanding of the feature.

130 **3.2.2 End User Seeking Explanation of Feature Name in Print Dialog**

131 Violet is editing a paper and wants to print it to an IPP Everywhere™ printer. When looking
132 through the printer's features in the print dialog window, she discovers a feature selection
133 whose name doesn't obviously describe its meaning. She drags her mouse pointer over
134 the name to cause the presentation of a "tooltip" contextual help overlay. The application
135 presents the tooltip content from the printer's message catalog in an overlay while her
136 mouse pointer remains over that label. Violet reads the tooltip and gains an understanding
137 of the feature's meaning and chooses to use it.

138 **3.3 Exceptions**

139 There are no exception conditions for the use cases specified in section 3.2.

140 **3.4 Out of Scope**

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

- 142 1. Specifying the user interface for controls that present the help content

143 3.5 Design Requirements

144 The design requirements for this document are:

- 145 1. Describe extensions to the PWG Message Catalog content syntax that allow the
146 Printer to provide additional descriptions for options in the strings catalog;

147 4. Message Catalog Format Extensions

148 The PWG Message Catalog file format [PWG5100.13] provides localized string labels for
149 IPP attributes and non-textual attribute values. In some cases, the User may want more
150 information about a particular attribute or attribute value. This additional information,
151 usually also being textual in nature, also requires localization.

152 The existing syntax is extended using a "suffix". A suffixes starts with an underscore, since
153 attribute names and values can't start with an underscore [STD92], to preserve the existing
154 semantics but create space for these new facilities. Two suffixes are described in Table 1.

155 **Table 1: Message Catalog Suffix Additions**

Suffix	Description	Example
<code>_tooltip</code>	UTF-8 plain text content providing a brief description of the attribute or attribute value.	<code>"attribute-name._tooltip"</code> <code>"attribute-name.value._tooltip"</code>
<code>_helpurl</code>	URL to help content providing more detailed information about the attribute or attribute value.	<code>"attribute-name._helpurl"</code> <code>"attribute-name.value._helpurl"</code>

156 The URLs for "`_helpurl`" entries can be absolute or relative to the Message Catalog origin.

157 As an example, a Printer that specifies two collections in its "media-col-ready", one that
158 specifies 'stationery' for its "media-type" value, and the other that specifies 'smi32473-eco-
159 lite' for its "finishing-template" value, can implement among others the following attributes
160 and values, using "ipptoolfile" syntax [IPPSAMPLE]:

```

161 ATTR collection media-col-ready
162 {
163     MEMBER keyword media-type "stationery"
164     MEMBER keyword media-source "tray-1"
165     MEMBER collection media-size
166     {
167         # iso_a4_210x297mm
168         MEMBER integer x-dimension 21000

```

```

169         MEMBER integer y-dimension 29700
170     }
171     MEMBER integer media-top-margin 500
172     MEMBER integer media-bottom-margin 500
173     MEMBER integer media-left-margin 500
174     MEMBER integer media-right-margin 500
175 }, {
176     MEMBER keyword media-type "smi32473-eco-lite"
177     MEMBER keyword media-source "tray-2"
178     MEMBER keyword media-color white
179     MEMBER collection media-size
180     {
181         # na_letter_8.5x11in
182         MEMBER integer x-dimension 21590
183         MEMBER integer y-dimension 27940
184     }
185     MEMBER integer media-bottom-margin 500
186     MEMBER integer media-left-margin 500
187     MEMBER integer media-right-margin 500
188     MEMBER integer media-top-margin 500
189 }

```

190 Its Message Catalog might include the following for "attributes-natural-language" = 'en-us':

```

191 media-type = "Media Type";
192 media-type.stationery = "Stationery";
193 media-type.stationery._tooltip = "Conventional Stationery";
194 media-type.stationery._helpurl = " //__help/media-types.html";
195 media-type.smi32473-eco-lite = "PWG Eco Lite";
196 media-type.smi32473-eco-lite._ tooltip = "Lightweight paper that may tear";
197 media-type.smi32473-eco-lite._helpurl = " //__help/media-types.html#ecolite";

```

198

199 5. Internationalization Considerations

200 For interoperability and basic support for multiple languages, conforming implementations
201 MUST support:

- 202 1. The Universal Character Set (UCS) Transformation Format -- 8 bit (UTF-8) [STD63]
203 encoding of Unicode [UNICODE] [ISO10646]; and
- 204 2. The Unicode Format for Network Interchange [RFC5198] which requires
205 transmission of well-formed UTF-8 strings and recommends transmission of
206 normalized UTF-8 strings in Normalization Form C (NFC) [UAX15].

207 Unicode NFC is defined as the result of performing Canonical Decomposition (into base
208 characters and combining marks) followed by Canonical Composition (into canonical
209 composed characters wherever Unicode has assigned them).

210 WARNING – Performing normalization on UTF-8 strings received from Clients and
211 subsequently storing the results (e.g., in Job objects) could cause false negatives in Client
212 searches and failed access (e.g., to Printers with percent-encoded UTF-8 URIs now
213 'hidden').

214 Implementations of this Best Practice document SHOULD conform to the following
215 standards on processing of human-readable Unicode text strings, see:

216 Unicode Bidirectional Algorithm [UAX9] – left-to-right, right-to-left, and vertical

217 Unicode Line Breaking Algorithm [UAX14] – character classes and wrapping

218 Unicode Normalization Forms [UAX15] – especially NFC for [RFC5198]

219 Unicode Text Segmentation [UAX29] – grapheme clusters, words, sentences

220 Unicode Identifier and Pattern Syntax [UAX31] – identifier use and normalization

221 Unicode Collation Algorithm [UTS10] – sorting

222 Unicode Locale Data Markup Language [UTS35] – locale databases

223 Implementations of this Best Practice document are advised to also review the following
224 informational documents on processing of human-readable Unicode text strings:

225 Unicode Character Encoding Model [UTR17] – multi-layer character model

226 Unicode Character Property Model [UTR23] – character properties

227 Unicode Conformance Model [UTR33] – Unicode conformance basis

228 **6. Security Considerations**

229 The IPP extensions defined in this document require the same security considerations as
230 defined in the Internet Printing Protocol/1.1 [STD92]

231 Implementations of this Best Practice document SHOULD conform to the following
232 standard on processing of human-readable Unicode text strings, see:

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

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

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

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315 **9. Change History**

316 **9.1 May 28, 2019**

317 Revised as per minutes from April 25, 2019 IPP WG meeting.

318 **9.2 April 19, 2019**

319 Initial revision extracted from initial draft of "IPP Custom Print Quality and Intent
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