



January 30, 2017
White Paper

The Printer Working Group

1 **IPP Get-User-Printer-Attributes Operation**
2 **(USRATTROP)**

3 Status: Initial

4 Abstract: This document proposes a new Get-User-Printer-Attributes IPP operation that
5 allows an IPP Client to retrieve the Printer's settings that are available to the Client's
6 current User.

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 <http://ftp.pwg.org/pub/pwg/GROUP/white/tb-userop-20170130.odt>
11 <http://ftp.pwg.org/pub/pwg/GROUP/white/tb-userop-20170130.pdf>

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12 Title: *IPP Get-User-Printer-Attributes Operation (USRATTROP)*

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47 **1 Introduction**

48 This document proposes a new Get-User-Printer-Attributes IPP operation that allows an
49 IPP Client to retrieve the Printer's settings that are available to the Client's current User. It
50 is semantically identical to the existing Get-Printer-Attributes IPP operation, with the key
51 difference that the Printer will always respond with an authentication challenge. Once the
52 Client has authenticated using the User's credentials, the Printer will respond with the
53 settings for that user.

54 **2 Terminology**

55 **2.1 Protocol Roles Terminology**

56 This document defines the following protocol roles in order to specify unambiguous
57 conformance requirements:

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

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

63 **2.2 Other Terms Used in This Document**

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

65 **2.3 Acronyms and Organizations**

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

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

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

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

70 **3 Rationale for IPP Get-User-Printer-Attributes Operation**

71 Provide a rationale for the document.

72 **3.1 Use Cases**

73 The need for solutions to this use case emerged during the process of writing the IPP
74 Implementor's Guide v2 .

75 **3.1.1 User Print Policy from Printer**

76 Duncan is at the office and needs to print a 5 page document that contains color diagrams.
77 He has been granted permission to print in color from his office applications by his office
78 network administrator. Duncan opens the document on his tablet, taps to print, and selects
79 the desired Printer, which is at the end of the hallway. The Printer authenticates the tablet
80 using Duncan's credentials, and then provides the tablet with the print choices available to
81 Duncan, which includes the option to print in color or monochrome. He prints the document
82 and then goes on with his work.

83 Later, Duncan gets a text from his wife that she would like him to print some family pictures
84 on the office printer. He opens the pictures in his photo app, selects the pictures, taps to
85 print, selects the same printer, and is presented only with the option to print in
86 monochrome. He abandons printing the photos.

87 **3.1.2 User Print Policy from Separate Print Policy Server**

88 Garrett is at his office, and needs to print a 10 page slide set that contains color graphs. He
89 has been granted permission to print in color from his office applications by his office
90 network administrator. Garrett opens the document on his laptop, chooses to print, and
91 selects the desired Printer, which is in his office. The Printer authenticates the laptop using
92 Garrett's credentials, and then provides the tablet with the print choices available to
93 Duncan, which includes the option to print in color or monochrome. His network
94 administrator has implemented a separate "print policy server".

95 **3.1.3 User Not Listed In Print Policy But Allowed To Print**

96 Ed is visiting Garrett's office and needs to print a 12 page document that contains color
97 diagrams. Ed is not listed as a user in the print policy. Ed opens the document on his
98 laptop, clicks to print, and selects the Printer recommended by Garrett. The laptop is
99 challenged to authenticate but has no valid credentials. The Printer provides Ed's laptop
100 with the print choices available to unknown users, which does not include the option to
101 print in color. Ed prints the document in grayscale and he and Garrett go to their meeting.

102 **3.1.4 User Not Listed in Print Policy and Denied Ability to Print**

103 Ed is visiting Duncan's office and needs to print a 3 page document. Ed is not listed as a
104 user in the print policy. Ed opens the document on his laptop, clicks to print, and selects
105 the Printer recommended by Duncan. The laptop is challenged to authenticate but has no
106 valid credentials. The Printer indicates to Ed via his laptop that he has no rights to print
107 from this Printer.

108 **3.2 Exceptions**

109 There are no exceptions to the use cases in section 3.1.

110 **3.3 Out of Scope**

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

- 112 1. Definition of print policies.
- 113 2. Definition of non-IPP protocols that can provide similar functionality.

114 **3.4 Design Requirements**

115 The design requirements for this document are:

- 116 1. Define a mechanism for IPP that allows a Client to acquire the set of print
117 features available from a particular Printer for a particular User.
- 118 2. Define the appropriate mechanism to refer a Client to a separate IPP Print Policy
119 Server.
- 120 3. Register all attributes and operations with IANA.

121 The design recommendations for this document are:

- 122 1. Recommend suitable authentication methods that could provide a high quality
123 user experience.

124 **4 Technical Solutions/Approaches**

125 The existing Get-Printer-Attributes operation itself has the correct semantics, but the
126 expectation of all legacy Clients is that the Printer will not respond to a Get-Printer-
127 Attributes operation with an HTTP challenge. Adding additional operation attributes to the
128 Get-Printer-Attributes operation to allow that operation to be used for this purpose was
129 similarly deemed inappropriate. As such, a new operation was deemed necessary.

130 **4.1 Get-User-Printer-Attributes Operation**

131 This REQUIRED operation allows a Client to request the values of the attributes of a
132 Printer. The semantics of this operation are identical to the semantics for the Get-Printer-
133 Attributes operation, with the difference that the Client MUST be prepared to respond to an
134 HTTP authentication challenge.

135 If the Client initiates the Get-User-Printer-Attributes operation over a non-TLS connection,
136 the Client MUST be prepared to receive an HTTP 426 response to upgrade the connection
137 to TLS [RFC2817].

138 Internationalization Considerations

139 For interoperability and basic support for multiple languages, implementations use the
140 “Universal Character Set (UCS) Transformation Format -- 8 bit (UTF-8)” [RFC3629]
141 encoding of Unicode [UNICODE] [ISO10646] and the Unicode Format for Network
142 Interchange [RFC5198].

143 **5 Security Considerations**

144 The security considerations for the Get-User-Printer-Attributes operation are identical to
145 those listed for IPP/1.1 [RFC8011] and IPP/2.0 [PWG5100.12].

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180 standard:

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182 Zapp Brannigan - Democratic Order of Planets

183 **7 Change History**

184 **7.1 January 30, 2017**

185 Initial draft.