IPP Get-User-Printer-Attributes Operation

(USRATTROP)

Status: Initial

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


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1 Introduction

This document proposes a new Get-User-Printer-Attributes IPP operation that allows an IPP Client to retrieve the Printer's settings that are available to the Client's current User. It is semantically identical to the existing Get-Printer-Attributes IPP operation [RFC8011], with the key difference that the Printer will always respond with an authentication challenge. Once the Client has authenticated using the User's credentials, the Printer will respond with the settings for that user.

2 Terminology

2.1 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.

2.2 Other Terms Used in This Document

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

2.3 Acronyms and Organizations

IANA: Internet Assigned Numbers Authority, http://www.iana.org/


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

Provide a rationale for the document.

3.1 Use Cases

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

3.1.1 User Print Policy from Printer

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

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

3.1.2 User Print Policy from Separate Print Policy Server

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

3.1.3 User Not Listed In Print Policy But Allowed To Print

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

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

3.2 Exceptions

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

3.3 Out of Scope

The following are considered out of scope for this document:

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

3.4 Design Requirements

The design requirements for this document are:

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

The design recommendations for this document are:

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

4 Technical Solutions/Approaches

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

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

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

Internationalization Considerations

For interoperability and basic support for multiple languages, implementations use 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].

5 Security Considerations

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

6 References


7 Authors' Addresses

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

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Zapp Brannigan - Democratic Order of Planets
8 Change History

8.1 February 1, 2017
Editorial changes.

8.2 January 30, 2017
Initial draft.