



The Printer Working Group

IPP Workgroup Session, Day 1

February 7, 2018

PWG IP Policy



- "This meeting is being held in accordance with the PWG Intellectual Property Policy"
 - http://www.pwg.org/chair/membership_docs/pwg-ip-policy.pdf
- TL;DR: Anything you say in a PWG meeting or email to a PWG address can be used in a PWG standard
 - (but please do read the IP policy above if you haven't done so)



February 7, 2018

When	What
10:30 - 11:30	IPP Workgroup Status
11:30 - 12:00	Lunch Break
12:00 - 2:00	Google Summer of Code and "IPP for Dummies"
2:00 - 2:15	Break
2:15 - 3:30	IPP Job Password

February 8, 2018

When	What
9:00 - 12:00	IPP System Service
12:00 - 12:30	Lunch Break
12:30 - 3:00	OAuth2 and IPP Authentication and Next Steps



- Current charter:
 - <http://ftp.pwg.org/pub/pwg/ipp/charter/ch-ipp-charter-20170615.pdf>
- The Internet Printing Protocol (IPP) workgroup is chartered with the maintenance of IPP, the IETF IPP registry, and support for new clients, network architectures (Cloud, SDN), service bindings for MFDs and Imaging Systems, and emerging technologies such as 3D Printing
- In addition, we maintain the IETF Finisher MIB, Job MIB, and Printer MIB registries, and handle synchronization with changes in IPP



- **IPP WG Co-Chairs:**
 - Paul Tykodi (TCS)
 - Ira McDonald (High North)
- **IPP WG Secretary:**
 - Michael Sweet (Apple)
- **IPP WG Document Editors:**
 - Ira McDonald (High North) – IPP System Service (SYSTEM)
 - Michael Sweet (Apple) – IPP System Service (SYSTEM)
 - Smith Kennedy (HP Inc.) – Various white papers

Status (1/3)



- PWG Specifications in development:
 - IPP System Service v1.0 (SYSTEM) - Prototype Draft
- IPP Registration Documents in development:
 - IPP Authentication Methods - Interim Draft

Status (2/3)



- Recently Approved Registration Documents:
 - IPP Get-User-Printer-Attributes
 - IPP Presets
- Recent Candidate Standards:
 - PWG 5100.1-2017: IPP Finishings 2.1 (FIN)
 - PWG 5100.21-2017: IPP 3D Printing Extensions v1.0 (3D)
- Recent IETF RFCs:
 - RFC 8010: Internet Printing Protocol/1.1: Encoding and Transport
 - RFC 8011: Internet Printing Protocol/1.1: Model and Semantics



- Up-to-date pending IANA registrations online:
 - <http://www.pwg.org/ipp/ipp-registrations.xml>
 - Continue to maintain this in parallel for new specifications
 - Github repository: <https://github.com/istopwg/ippregistry>
- IPP Everywhere Printer Self-Certifications:
 - <https://www.pwg.org/printers>
 - 206 printers currently listed (more than doubled since August 2017)
 - Second 1.0 self-certification tools update released in October 2017
- IPP Sample Code:
 - Github repository:
 - <https://github.com/istopwg/ippsample>
 - Fork of CUPS code includes ipppfind, ippproxy, ippserver, ipptool, ipptransform, and ipptransform3d



IETF IPP/1.1 Updates

- RFCs 8010 and 8011 have been published which replace (obsolete) RFCs 2910, 2911, 3381 (deprecated job progress attributes), and 3382 (collection attribute syntax)
- Published RFCs:
 - <http://tools.ietf.org/html/rfc8010>
 - <http://tools.ietf.org/html/rfc8011>
- **Pending:** Advance RFC 8010 and 8011 to IETF Internet Standard through status change
 - IESG process described in RFCs 2026 and 6410
 - Mike and Ira working on this



IPP Everywhere Self-Certification

- Resources:
 - <http://www.pwg.org/ipp/everywhere.html> (for tools/info)
 - <https://www.pwg.org/ippeveselfcert> (submission form)
 - <http://www.pwg.org/printers> (printer list)
 - <https://github.com/istopwg/ippeveselfcert> (Github repo)
- Released v1.0 Update 2 of self-certification tools on October 13th, 2017
- Planning future 1.1 errata update for manual and tools in 2018:
 - More tests (Cancel-My-Jobs, Close-Job, Identify-Printer)
 - Other necessary changes that are not simple bug fixes in the tools/submission portal
- Proposed Schedule:
 - 1.1 errata update: Q1 2018



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Lunch Break

OpenPrinting Google Summer of Code



- Linux Foundation has been approved to participate
- Page for 2018 project ideas:
 - <https://wiki.linuxfoundation.org/gsoc/google-summer-code-2018>

"IPP for Dummies"



- A short introduction to IPP client development
- Target audience is developers new to IPP, typically enterprise web applications
- Development being tracked in a new Github repository:
 - <https://github.com/istopwg/pwg-books>



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Break

IPP Job Password



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IPP Workgroup Session, Day 2

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IPP System Service (SYSTEM)

- Current prototype draft at:
 - <http://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippssystem10-20171113-rev.pdf>
- Combines and implements a concrete IPP binding of the following abstract Semantic Model 2.0 services and objects:
 - PWG 5108.06: System Object and System Control Service
 - PWG 5108.03: Network Resource Service
 - PWG 5109.1: Cloud Imaging Requirements and Model
- Proposed Schedule:
 - Stable draft in Q2 2018



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Lunch Break



IPP Authentication Methods

- Current white paper:
 - <http://ftp.pwg.org/pub/pwg/ipp/whitepaper/tb-ippauth-20170803.pdf>
- Provides an overview of how HTTP authentication methods are used with IPP
 - Currently HTTP Basic, HTTP Digest, HTTP Bearer (OAuth 2.0), HTTP Negotiate (Kerberos)
 - Maybe HTTP MutualAuth and others in the future



IPP and OAuth 2.0

- OAuth 2.0 (RFC 6749) defines four (sometimes confusing) roles: Authorization Server, Client, Resource Owner, and Resource Server
- OAuth 2.0 uses a multi-step authentication process:
 - Step 1 involves a web-based authorization/authentication process where a Client requests authorization from the Resource Owner (via the Client's web browser viewing a page on the Authorization Server)
 - If successful, the Client client gets a "grant" approving access in a redirection URL with URL-encoded form variables
 - PKCE (RFC 7636) is used for "native apps" to securely perform this step
 - Step 2 involves the Client requesting an "access token" from the Authorization Server using the grant it got from step 1. This request is a HTTP POST using form variables
 - Step 3 involves the Client supplying the access token to the Resource Server to authenticate/authorize access to the resource. For IPP/HTTP the Bearer method (RFC 6750) is used



IPP and OAuth 2.0 (con't)

- OAuth 2.0 also has a password grant method where you supply a username and password and get an access token
 - Replaces steps 1 and 2 on the previous slide with a single POST with the credentials (no web browser needed)
 - Not widely implemented since it does not support things like two-factor authentication, captchas, and other enhancements to the traditional username + password approach
- Printers that implement OAuth 2.0 as an authentication method also must use token introspection (RFC 7662)
 - <https://tools.ietf.org/html/rfc7662>
- Good background reading:
 - <https://aaronparecki.com/oauth-2-simplified/>

mOAuth Project



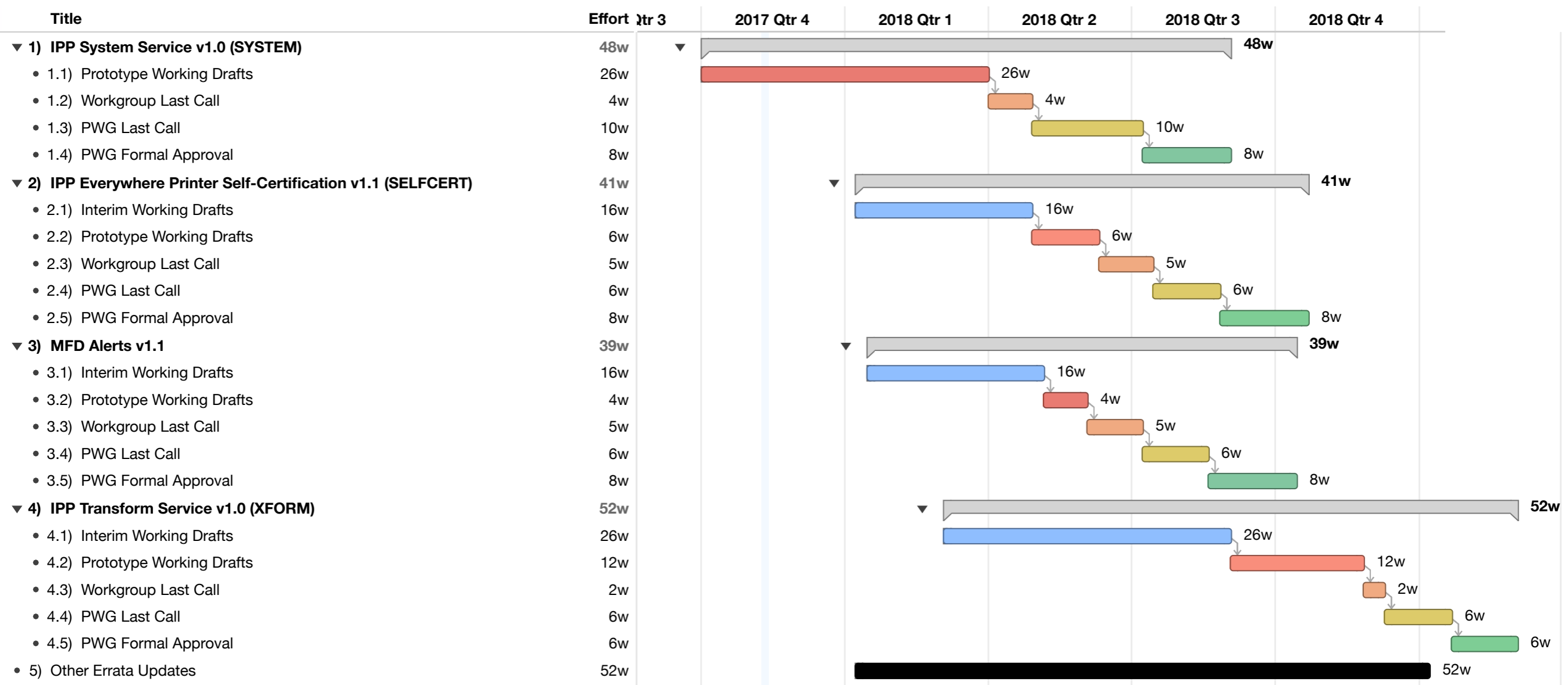
- New open source project to develop a simple OAuth 2 authentication and resource server with associated client library:
 - <https://github.com/michaelsweet/moauth>
- License: Apache 2.0
- Status: Nearing beta release



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Next Steps

Next Steps





Next Steps

- Advance IPP/1.1 to IETF Internet Standard
 - Request change of status
- IPP Authentication Methods (Smith)
 - Continue developing as a white paper
- IPP System Service (Ira/Mike)
 - Stable working draft in Q2 2018
- IPP Everywhere Printer Self-Certification Manual v1.1 (Mike/Smith)
 - Interim working draft in Q1 2018
- MFD Alerts v1.1 (Ira/Mike - Errata Update)
 - Initial working draft in Q1 2018
- IPP Transform Service v1.0 (Ira/Paul)
 - Initial working draft in Q2 2018



More Information

- We welcome participation from all interested parties
- IPP Working Group web page
 - <http://www.pwg.org/ipp/index.html>
- Subscribe to the IPP mailing list
 - <https://www.pwg.org/mailman/listinfo/ipp>
- IPP WG holds bi-weekly phone conferences announced on the IPP mailing list
 - Next conference calls scheduled for Thursday, February 15, 2018 and March 1, 2018 at 3pm ET