The Printer Working Group

IPP Workgroup Session, Day 1

November 15, 2017

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)

Agenda

November 15, 2017

When	What
10:30 - 12:00	IPP Workgroup Status and IPP Presets
12:00 - 12:30	Lunch Break
12:30 - 3:30	IPP System Service v1.0

November 16, 2017

When	What
11:00 - 12:00	IPP Get-User-Printer-Attributes and IPP Authentication Methods
12:00 - 12:30	Lunch Break
12:30 - 2:00	Liaison Status and Next Steps

Charter

- 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

Officers

- 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

- PWG Specifications in development:
  - IPP System Service v1.0 (SYSTEM)   - Prototype Draft

- IPP Registration Documents in development:
  - IPP Authentication Methods   - Interim Draft
  - IPP Get-User-Printer-Attributes   - Stable Draft
  - IPP Presets   - Stable Draft

- 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 ippfind, 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

- On November 7, Apple announced that CUPS will now be licensed under the Apache License Version 2.0
  - Previously CUPS used the GPLv2 and LGPLv2 licenses with some exceptions
  - The old licenses were incompatible with GPLv3, Apache, and several other open source licenses
  - The new license may be incompatible with GPLv2-only software (depends on whether you consider CUPS part of the base OS)
- This affects the IPP Sample and IPP Everywhere Self-Certification Github repositories which use CUPS code
  - Currently these repositories use a dual CUPS + New BSD open source license
  - As soon as the latest CUPS code is incorporated, the new CUPS license will be used for that code.
  - Question: Should we simplify the PWG Github code to use a single license (Apache V2)?

Apache License Version 2.0 Summary

- Basically a superset of the New BSD license

Apache License Version 2.0	New BSD
1. Definitions	No definitions provided
2. Grant of Copyright License	Initial paragraph of license
3. Grant of Patent License	Not addressed
4. Redistribution	Items 1-3 of license
5. Submission of Contributions	Not addressed
6. Trademarks	Not addressed
7. Disclaimer of Warranty	Final paragraph of license
8. Limitation of Liability	Final paragraph of license
9. Accepting Warranty of Additional Liability	Not addressed

- Advantages for PWG:
  - Addresses how contributions from non-members are accepted
  - Addresses IP (patent and trademark) issues
  - Further protects the PWG from warranty or liability claims
  - Philosophically aligned with PWG membership agreement and IP policy
    - Contributions given to PWG are available for use in a standard/software
    - Patent grant limited to the standard/software
    - Trademarks (PWG, IPP Everywhere) limited to identifying our work
- Disadvantages for PWG:
  - Not compatible with GPL2-only software (might be a consideration in the future, but is also an issue for CUPS)

IPP Presets

- Current (stable) registration document:
  - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ipppreset-20171108-rev.pdf
- "job-presets-supported" and "job-triggers-supported" Printer Description attributes
- Provides named presets (sets of Job Template attributes)
- Provides a way for Clients to know that selection of one Job Template attribute value should also select others, e.g., selecting 4x6 media should also trigger "print-quality" getting set to 'high'.
- Schedule: Start IPP WG Last Call ASAP

The Printer Working Group

Lunch Break

IPP System Service (SYSTEM)

- Current prototype draft at:
  - http://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippsystem10-20171113-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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IPP Workgroup Session, Day 2

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IPP Get-User-Printer-Attributes (GUPA)

- Current (stable) registration document:
  - http://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippgupa-20171116-rev.pdf
- Version of Get-Printer-Attributes that uses the most authenticated user to filter the attributes and values that are returned
  - Get-Printer-Attributes is not defined to do filtering based on the requesting user
- This operation can be authenticated
  - Get-Printer-Attributes is not defined to do authentication, so most Clients will not work with Printers that try to authenticate it
- Schedule: Start IPP WG Last Call ASAP

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

- 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/

![The Printer Working Group logo (PWG)]

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Lunch Break

Liaisons

- See Plenary slides for status
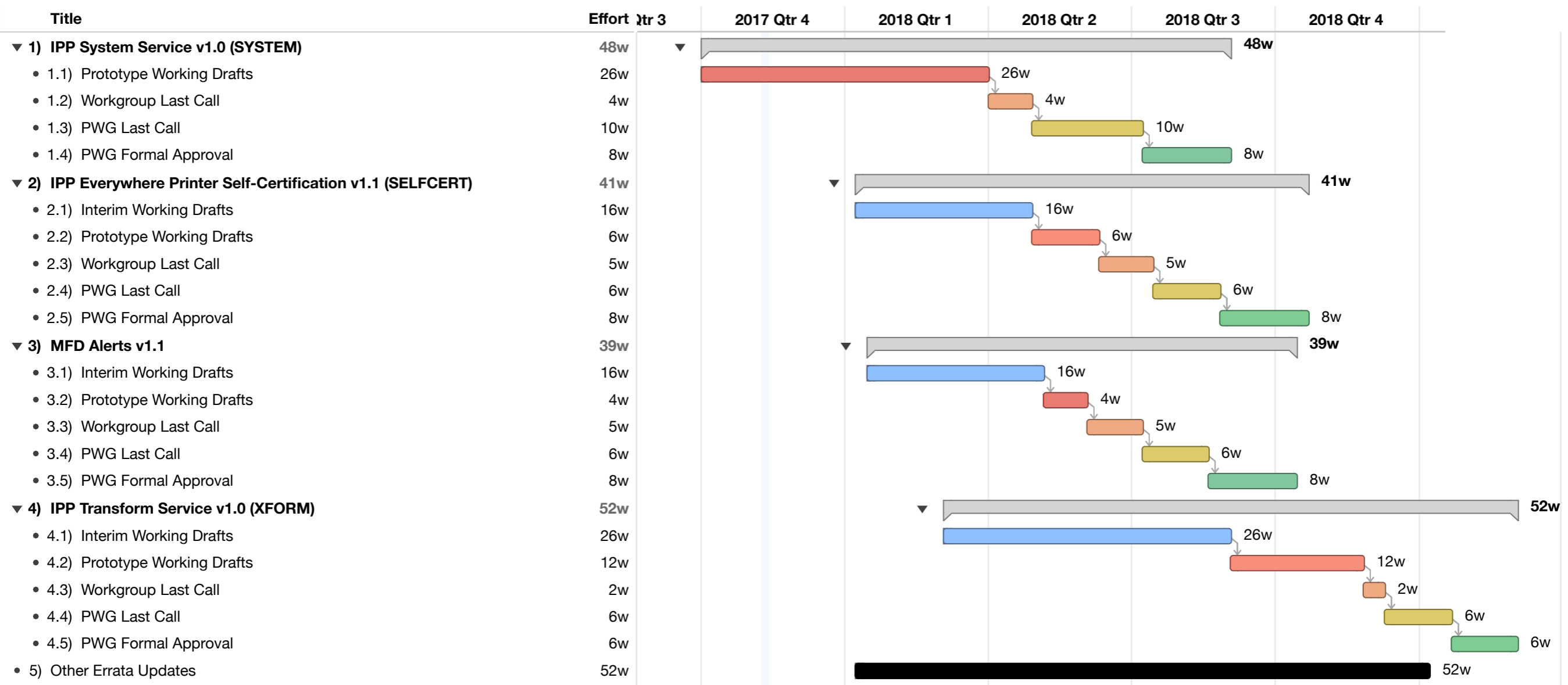- Discuss any 3D issues that came up during the Plenary that need to be discussed in the IPP workgroup...

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Next Steps

Next Steps

Title	Effort	Qtr 3	2017 Qtr 4	2018 Qtr 1	2018 Qtr 2	2018 Qtr 3	2018 Qtr 4
▼ 1) IPP System Service v1.0 (SYSTEM)	48w						48w
• 1.1) Prototype Working Drafts	26w			26w			
• 1.2) Workgroup Last Call	4w				4w		
• 1.3) PWG Last Call	10w				10w		
• 1.4) PWG Formal Approval	8w					8w	
▼ 2) IPP Everywhere Printer Self-Certification v1.1 (SELFCERT)	41w						41w
• 2.1) Interim Working Drafts	16w			16w			
• 2.2) Prototype Working Drafts	6w				6w		
• 2.3) Workgroup Last Call	5w				5w		
• 2.4) PWG Last Call	6w				6w		
• 2.5) PWG Formal Approval	8w					8w	
▼ 3) MFD Alerts v1.1	39w						39w
• 3.1) Interim Working Drafts	16w			16w			
• 3.2) Prototype Working Drafts	4w				4w		
• 3.3) Workgroup Last Call	5w				5w		
• 3.4) PWG Last Call	6w				6w		
• 3.5) PWG Formal Approval	8w					8w	
▼ 4) IPP Transform Service v1.0 (XFORM)	52w						52w
• 4.1) Interim Working Drafts	26w				26w		
• 4.2) Prototype Working Drafts	12w					12w	
• 4.3) Workgroup Last Call	2w					2w	
• 4.4) PWG Last Call	6w					6w	
• 4.5) PWG Formal Approval	6w						6w
• 5) Other Errata Updates	52w						52w

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 Get-User-Printer-Attributes (Smith)
  - Finish IPP last call
- IPP Presets (Smith)
  - Finish IPP last call
- 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, December 7, 2017 and January 4, 2018 at 3pm ET