



# The Printer Working Group

IPP Workgroup Session, Day 1

November 14, 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](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)



## November 14, 2018 (Mountain Standard Time)

When	What
09:00 - 10:15	PWG Plenary
10:15 - 10:30	IPP WG: Status
10:30 - 11:00	IPP WG: IPP Everywhere v1.1
11:00 - 11:30	Break / Lunch
11:30 - 12:15	IPP WG: 3D Liaison Status Report and Discussion
12:15 - 13:00	IPP WG: IPP 3D v1.1, PWG Safe G-Code
13:00 - 13:15	Break
13:15 - 14:00	IPP WG: IPP System Service
14:00 - 15:00	IPP WG: IPP Authentication Methods



## November 15, 2018 (Mountain Standard Time)

When	What
09:00 - 11:00	IDS WG: Status and Discussion
11:00 - 11:30	Break / Lunch
11:30 - 13:00	IPP WG: IPP JPS2 v2.0
13:00 - 13:15	Break
13:15 - 13:45	IPP WG: MFD Alerts v1.1
13:45 - 14:30	IPP WG: IPP Document Object v1.1
14:30 - 15:00	IPP WG: 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, MFD Alerts v1.1
  - Michael Sweet (Apple) – How to Use the Internet Printing Protocol, IPP 3D Printing Extensions v1.1, IPP Document Object v1.1, IPP Encrypted Jobs and Documents, IPP Everywhere v1.1, IPP Everywhere Printer Self-Certification Manual v1.1, IPP Job Extensions v1.1, IPP System Service, PWG Safe G-Code
  - Smith Kennedy (HP Inc.) – IPP Authentication Methods, IPP Encrypted Jobs and Documents, IPP Job and Printer Extensions - Set 2 v2.0 (JPS2)
  - Peter Zehler (Xerox) - How to Use the Internet Printing Protocol

# Status (1/2)



- PWG Specifications in development:
  - IPP 3D Printing Extensions v1.1 - Prototype Draft
  - IPP Document Object v1.1 - Interim Draft
  - IPP Everywhere v1.1 - Prototype Draft
  - IPP Everywhere Printer Self-Certification Manual v1.1 - Prototype Draft
  - IPP Job Extensions v1.1 - Interim Draft
  - IPP Job and Printer Extensions - Set 2 v2.0 - Initial Draft
  - IPP System Service v1.0 - Prototype Draft
  - MFD Alerts v1.1 - Initial Draft
- IPP Best Practices in development:
  - IPP Authentication Methods - Interim Draft
  - IPP Encrypted Jobs and Documents - Interim Draft
  - PWG Safe G-Code Subset for 3D Printing - Stable Draft
- IPP Book in development:
  - How to Use the Internet Printing Protocol - Interim Draft

# Status (2/2)



- 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>
  - 355 printers currently listed (tripled since August 2017)
  - Second 1.0 self-certification tools update released in October 2017
  - Third 1.0 self-certification tools update released in November 2018
- IPP Sample Code:
  - Github repository:
    - <https://github.com/istopwg/ippsample>
  - Fork of CUPS code includes ippfind, ippproxy, ippserver, ipptool, ipptransform, and ipptransform3d





# 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 3 of self-certification tools on November 9th, 2018
  - Fixes all known issues in v1.0 tools
  - v1.0 is tracking CUPS 2.2.x (current stable branch)
- Planning future 1.1 errata update for manual and tools in Q1 2019
  - v1.1 will track CUPS 2.3.x (current development branch)

# IPP Everywhere v1.1



- Prototype drafts:
  - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeve11-20180926-rev.pdf>
  - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeveselfcert11-20180704-rev.pdf>
- Proposed schedule:
  - Stable drafts and beta tools Q1 2019



# Self-Certification 1.1 Update

- Tool changes:
  - Align with conformance requirements in v1.1 spec
  - More tests for required operations: Cancel-My-Jobs, Close-Job, Identify-Printer
  - New OS requirements
    - Linux: Ubuntu LTS 18.04 (64-bit Intel)
    - macOS: 10.14 or later (64-bit Intel)
    - Windows: 7 or later (64-bit Intel)
- Portal changes:
  - Track implementation type: logical device (server) vs. physical device (printer)
  - Track specific capabilities (type of finishers, etc.)
  - Existing submissions will be updated by hand (only 2 have finishers, all are printers)



# RFC: Submission Tools

- Current PWG web site uses custom PHP code for the submission portal
  - ISTO is pushing for changes to our web site hosting
  - Github can provide us with web site hosting, but only supports "static" web sites (HTML, Javascript, etc.)
- What if we provided a local tool that validated the self-certification results and produced JSON data that could be submitted as an attachment to a Github issue, e.g.  
  
`./validate "Printer Name"`
- The local tool would produce a JSON file for submission as an issue on the `ippeveselfcert` project
  - The webmaster (currently Mike Sweet) would merge the additions
  - Changes/additions to existing registrations could be requested the same way



# The Printer Working Group

Lunch Break

*Resuming at 11:30am MT*



# IPP 3D Liaison Discussions

- ASTM Committee F42 on Additive Manufacturing Technologies
  - <https://www.astm.org/COMMITTEE/F42.htm>
- ISO/IEC JTC 1 WG 12 3D Printing and Scanning eCommittee
  - <https://isotc.iso.org/livelink/livelink?func=ll&objId=19905763&objAction=browse&viewType=1>
  - Participation in the ISO initiative is currently via the INCITS Ad Hoc.
- 3D PDF Consortium
  - <https://www.3dpdfconsortium.org>
- 3D Concrete Printing Standards Development
  - NIST
  - ACI
  - ASTM
- 3MF Consortium
  - <https://www.3mf.io>



# IPP 3D Printing Extensions v1.1

- Prototype draft:
  - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ipp3d11-20180704-rev.pdf>
- Errata update to address specific implementation issues on entry-level 3D printers and enable support for generic cloud/local slicing services
- Proposed schedule:
  - Stable draft Q1 2019

# PWG Safe G-Code Subset for 3D Printing



- **Stable draft:**
  - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-pwgsafegcode10-20180704-rev.pdf>
- **Best Practice document that defines a common subset of G-Code for FDM printers**
  - Convenient format for adoption by existing 3D printers
  - Targeting only as a best practice document because G-Code isn't an ideal long-term intermediate format
- **Have solicited review from outside developers**
- **Discussion:**
  - Other G-Code commands required?
  - Other Printer Description or Job Template attributes required?
- **Proposed schedule:**
  - IPP WG Last Call Q1 2019





# The Printer Working Group

Break

*Resuming at 1:15pm MT*



# IPP System Service (SYSTEM)

- Current prototype draft at:
  - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippsystem10-20180701-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 Q1 2019



# IPP Authentication Methods

- Current white paper:
  - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippauth10-20181109-rev.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), TLS Client Certificate
  - Discussion about SAML authentication with OAuth 2.0



# The Printer Working Group

IPP Workgroup Session, Day 2

November 15, 2018



- "This meeting is being held in accordance with the PWG Intellectual Property Policy"
  - [http://www.pwg.org/chair/membership\\_docs/pwg-ip-policy.pdf](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)



## November 15, 2018 (Mountain Standard Time)

When	What
09:00 - 11:00	IDS WG: Status and Discussion
11:00 - 11:30	Break / Lunch
11:30 - 13:00	IPP WG: IPP JPS2 v2.0
13:00 - 13:15	Break
13:15 - 13:45	IPP WG: MFD Alerts v1.1
13:45 - 14:30	IPP WG: IPP Document Object v1.1
14:30 - 15:00	IPP WG: Next Steps

# IPP Job and Printer Extensions - Set 2 v2.0 (JPS2)



- Initial draft:
  - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippjobprinterext2v20-20180904.pdf>
- Changes:
  - Obsolescence of job-save-disposition
  - Addition of job-reprint-password
- Proposed schedule:
  - Prototype draft Q2 2019



# The Printer Working Group

Break

*Resuming at 1:15pm MT*



# MFD Alerts v1.1



- Initial draft:
  - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-pmpmfdalerts10-20180813-rev.pdf>
- Changes:
  - New marker supply alerts
  - General cleanup/registration fixes
- Proposed schedule:
  - Prototype draft Q2 2019



# IPP Document Object v1.1

- Interim draft:
  - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippdocobject11-20181022-rev.pdf>
- Changes:
  - General cleanup
  - Removal of obsolete attributes and values
  - No longer requires multiple document support (just Create-Job and Send-Document)
- Proposed schedule:
  - Prototype draft Q1 2019



# The Printer Working Group

## Next Steps



# Next Steps

- "How to Use the Internet Printing Protocol" Book (Mike/Pete)
  - Publish stable version in Q4 2018, post updates as needed
- IPP Authentication Methods (Smith)
  - Continue developing as best practice
- IPP Document Object v1.1 (Mike)
  - Prototype draft in Q1 2019
- IPP Everywhere and Self-Certification v1.1 (Mike/Smith)
  - Stable working drafts/beta tools in Q1 2019
- IPP Job Extensions v1.1 (Mike)
  - Prototype draft in Q1 2019
- IPP Job and Printer Extensions - Set 2 v2.0 (Smith)
  - Prototype draft in Q2 2019



# Next Steps (con't)

- IPP System Service (Ira/Mike)
  - Stable working draft in Q1 2019
- IPP 3D Printing Extensions v1.1 (Mike)
  - Stable draft in Q1 2019
- PWG Safe G-Code Subset for 3D Printing (Mike)
  - IPP WG Last Call in Q1 2019
- MFD Alerts v1.1 (Ira - Errata Update)
  - Prototype working draft in Q2 2019
- Investigate other errata updates:
  - RFC 3996: 'ippget' Pull Notification Method
- IPP Encrypted Jobs and Documents (Mike/Smith)
  - Prototype draft in Q2 2019



# More Information

- We welcome participation from all interested parties
- IPP Working Group web page
  - <https://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 6, 2018 and January 17, 2019 at 3pm ET