



The Printer Working Group

IPP Workgroup Session, Day 1

February 5, 2020

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 (1/2)



February 5, 2020 (US Mountain Standard Time)

When	What
09:00 - 10:00	PWG Plenary
10:00 - 10:30	IPP WG: Status
10:30 - 11:00	IPP WG: IPP Everywhere
11:00 - 11:30	Lunch
11:30 - 12:00	IPP WG: IPP Production Printing Ext v2.0
12:00 - 13:30	IPP WG: IPP Driverless Printing Ext v2.0
13:30 - 14:00	Break
14:00 - 15:00	IPP WG: Job Accounting with IPP v1.0

Agenda (2/2)



February 6, 2020 (US Mountain Standard Time)

When	What
09:00 - 11:00	IDS WG: Status and Discussion
11:00 - 11:30	Lunch
11:30 - 12:00	IPP WG: IPP Encrypted Jobs and Documents v1.0
12:00 - 13:30	IPP WG: IPP Enterprise Printing Extensions v2.0
13:30 - 14:00	Break
14:00 - 14:45	IPP WG: 3D Printing Liaisons
14:45 - 15:00	IPP WG: Next Steps



- Current charter:
 - <http://ftp.pwg.org/pub/pwg/ipp/charter/ch-ipp-charter-20170615.pdf>
- *Will be doing a charter update in 2020*
- 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, the PWG MIBs, and handle synchronization with changes in IPP



- **IPP WG Co-Chairs:**
 - Paul Tykodi (TCS)
 - Ira McDonald (High North)
- **IPP WG Secretary:**
 - Michael Sweet (Lakeside Robotics)
- **IPP WG Document Editors:**
 - Michael Sweet (Lakeside Robotics) – IPP Encrypted Jobs and Documents v1.0, IPP Everywhere v1.1, IPP Everywhere Printer Self-Certification Manual v1.1, IPP Label Printing Extensions v1.0, IPP Production Printing Extensions v2.0, Job Accounting with IPP v1.0
 - Smith Kennedy (HP Inc.) – IPP Driverless Printing Extensions v2.0, IPP Encrypted Jobs and Documents v1.0, IPP Enterprise Printing Extensions v2.0

Status (1/3)



- PWG Specifications in development:
 - IPP Encrypted Jobs and Documents v1.0 - Interim
 - IPP Everywhere v1.1 - Stable
 - IPP Everywhere Printer Self-Certification Manual v1.1 - Prototype
 - IPP Enterprise Printing Extensions v2.0 - Interim
 - IPP Driverless Printing Extensions v2.0 - Interim
 - IPP Production Printing Extensions v2.0 - Prototype
 - IPP Transaction-Based Printing Extensions v1.1 - WG Last Call
- IPP Best Practices in development:
 - Job Accounting with IPP v1.0 - Interim
- IPP Registrations in development:
 - IPP Label Printing Extensions v1.0 - WG Last Call
- Recently published:
 - PWG 5100.7-2019: IPP Job Extensions v2.0
 - PWG 5100.22-2019: IPP System Service v1.0
 - PWG 5199.10-2019: IPP Authentication Methods v1.0

Status (2/3)



- Up-to-date pending IANA registrations online:
 - <https://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>
 - 412 printers currently listed
 - 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 ipp3dprinter, ippeveprinter, ippfind, ippproxy, ippserver, ipptool, ipptransform, and ipptransform3d

Status (3/3)



- Pending Errata:

- PWG 5100.1-2017 (Finishings): 2 issues
- PWG 5100.5-2019 (Document Object): 3 issues
- PWG 5100.6-2003 (Page Overrides): 1 issue
- PWG 5100.9-2009 (Printer State Extensions): 1 issue
- PWG 5100.12-2015 (IPP 2.0, 2.1, and 2.2): 2 issues
- PWG 5100.15-2014 (FaxOut): 2 issues
- PWG 5100.18-2015 (Infrastructure Extensions): 5 issues
- PWG 5100.19-2015 (Implementor's Guide 2.0): 6 issues
- PWG 5107.3-2019 (MFD Alerts v1.1): 1 issue

- In-Progress Errata:

- PWG 5100.3-2001 (Production Printing): 2 issues
- PWG 5100.11-2010 (JPS2 - Enterprise Printing): 4 issues
- PWG 5100.13-2012 (JPS3 - Driverless Printing): 12 issues
- PWG 5100.14-2013 (Everywhere v1.0): 11 issues
- PWG 5100.16-2015 (Transactions): 3 issues
- PWG 5100.20-2016 (Everywhere Self-Cert v1.0): 3 issues

IPP Everywhere



- Stable draft of core specification:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeve11-20190827-rev.pdf>
- Prototype draft of manual:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeveselfcert11-20190827-rev.pdf>
- Beta tools nearing completion:
 - <https://github.com/istopwg/ippeveselfcert>
- New JSON-based portal:
 - <https://beta.pwg.org/printers>
- Submission tool for new JSON-based portal
- Proposed schedule:
 - Update 4 for v1.0 tools in Q1 2020
 - Stable drafts and beta tools for v1.1 in Q1 2020



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
 - v1.0 is tracking CUPS 2.2.x (previous stable branch)
 - Need an update 4 for another Windows packaging issue and the new JSON submission tool
- v1.1 self-certifications tools on track for Q1 2020
 - v1.1 tracks CUPS 2.3.x (current stable branch)
 - Includes new JSON submission tool and test updates

IPP Everywhere Printer Self-Certification Tools v1.0 Update 4



- Now available for testing:
 - <https://istopwg.github.io/ippeveselfcert>
- Please test with your printers and respond before February 27, 2020
- Additional changes for Windows 10:
 - Program Files directory is now read-only, so we can't store results files in the tools directory, nor can we extract the PWG Raster files for the test
 - The Windows tools now store results files on the desktop
 - Similarly, the tools now look on the desktop for the PWG Raster file directories



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Lunch Break

Resuming at 11:30 MDT



IPP Production Printing Ext. v2.0

- Current prototype draft:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippppx20-20200130-rev.pdf>
- Revision of PWG 5100.3-2001:
 - Addressed all issues/errata
 - Finishing attributes were moved to PWG 5100.1-2017: IPP Finishings v2.1
 - The "job-account-id", "job-accounting-user-id", "job-sheets-col", and "media-col" attributes were moved to PWG 5100.7-2019: IPP Job Extensions v2.0
 - References to the old PWG 5100.4-2001 (Override Attributes) working draft have been removed since that specification was withdrawn
- Proposed schedule:
 - Stable draft Q1/Q2 2020

IPP Driverless Printing Extensions v2.0



- Current interim draft:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippnodriver20-20200204-rev.pdf>
- Originally called "IPP Job and Printer Extensions - Set 3 (JPS3)"
- Revision of PWG 5100.13-2012:
 - Resolved all reported issues/errata
 - Added message catalog syntax extensions and semantics for "_tooltip" and "_helpurl" (from HELPME best practice draft)
 - Added "soft-proof-icc-profiles" and "print-quality-hints-supported" (from PQI best practice draft)
 - Added extensions to "print-color-mode" and "print-quality" (from PQI best practice draft)
- Proposed schedule:
 - Prototype draft Q2 2020



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Break

Resuming at 14:00 MDT



Job Accounting with IPP v1.0

- Interim draft:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippaccounting10-20200129.pdf>
- Best Practice document defining how to support job accounting with existing IPP attributes and functionality
 - Like the Implementor's Guide but for standards-based job accounting
- "printer-requested-job-attributes" moved to IPP Transaction-Based Printing Extensions v1.1
- Next slides:
 - Refining use cases/requirements
 - Identify specific attributes for accounting
 - How to support legacy clients?
- Proposed schedule:
 - Prototype draft in Q2 2020



Refining Use Cases/Requirements

- Clearly define how and why "job-account-id" and "job-accounting-user-id" are used
 - Identify business and legal issues with using unauthenticated values
 - Need to document expectations and limitations
- Are there other use cases or requirements that we are not capturing?



Identify Specific Attributes

- Key previously identified attributes:
 - "copies"
 - "finishings" / "finishings-col"
 - "document-format"
 - "document-format-details"
 - "document-name"
 - "job-account-id"
 - "job-accounting-user-id"
 - "job-name"
 - "job-originating-user-name" / "requesting-user-name"
 - "media" / "media-col"
 - "print-color-mode"
- Others?



How to Support Legacy Clients?

- During a transitional phase, accounting systems will need to support Clients that have not yet been updated
- What recommendations can we provide?
 - Provide default/derived values when the Client doesn't supply?
 - Reject job creation requests?
 - Hold jobs so that End User can supply the required values to release?
 - Probably would need a new job-state-reason for this...
 - Others?



The Printer Working Group

IPP Workgroup Session, Day 2
February 6, 2020

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IPP Encrypted Jobs and Docs. v1.0

- Interim draft:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ipptrustnoone10-20200128-rev.pdf>
- Summary:
 - Goal is to provide end-to-end privacy and data integrity through intermediaries using existing public-key standards
 - Defines new PGP-encrypted IPP message format, associated attributes, and operations
- Proposed schedule:
 - Prototype draft Q3 2020

IPP Enterprise Printing Extensions v2.0



- Current interim draft:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippepx20-20191010-rev.pdf>
- Update of PWG 5100.11-2010 ("JPS2")
 - Dropped job-save-disposition, replacing it with new Job Storage feature
 - Dropped pages-per-subset, replaced by job-pages-per-subset in 5100.1
 - Dropped sheet-collate (base attribute from RFC 3381 is obsolete)
 - Some non-enterprise-specific attributes were moved to PWG 5100.7
- Proposed schedule:
 - Prototype draft in Q2 2020



The Printer Working Group

Break

Resuming at 14:00 MDT



3D Printing Liaisons (1/3)

- America Makes & ANSI Additive Manufacturing Standardization Collaborative (AMSC)
 - https://www.ansi.org/standards_activities/standards_boards_panels/amsc/America-Makes-and-ANSI-AMSC-Overview
- ASTM Committee F42 on Additive Manufacturing Technologies
 - <https://www.astm.org/COMMITTEE/F42.htm>
 - New work product WK71395 focused on laser powder bed fusion 3D Printing
- 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 INCITS (supports US TAG)
 - INCITS – PWG liaison agreement needs INCITS Executive Board Approval
 - INCITS also working on "4D printing" (moving parts)
- 3D PDF Consortium + ISO/IEC TC171 WG12 Metadata
 - <https://www.3dpdfconsortium.org>
 - Y14.47 semantics are not fully aligned with PWG semantics
 - ISTO working with 3D PDF Consortium to engage with official PWG liaison agreement



3D Printing Liaisons (2/3)

- Drupa 2020 – PWG scheduled for three presentations
 - Drupa Cube (future of print – 3D Printing) June 20th, 2020
 - https://www.drupa.com/en/Visitors/drupa_Hot_Spots/drupa_cube
 - Drupa 3D Fab+Print Lectures (*June 20th, 2020 & June 22nd, 2020*)
 - <https://am.vdma.org/en/viewer/-/v2article/render/37276908>
- 3D Concrete Printing Standards Development
 - ACI, ASTM, NIST
 - ACI 564 Committee Meetings
 - Spring 2020 in Chicago, IL
 - Fall 2020 in Raleigh, NC
 - March 12, 2020 (tentative) for massive WebEx with PWG and others on concrete printing
 - July 6-8, 2020 - Digital Concrete 2020 - Eindhoven University, Netherlands
 - <https://digitalconcrete2020.com/>



3D Printing Liaisons (3/3)

- Healthcare 3D Printing & Bioprinting

- Attending Additive Manufacturing Strategies 2020 – The Business of 3D Printing: Medicine, Dentistry and Metals – *Feb 11th & 12th, 2020 in Boston, MA*
- Attending 3DHEALS Boston - Design for Healthcare 3D Printing and Bioprinting – March 18th, 2020
- Submitted Presentation Abstract for ARMI | BIOFABUSA SPRING SUMMIT: Meeting in the Millyard 2020 – *May 20th & 21st, 2020 in Manchester, NH*
- RAPID+TCT Tradeshow - *April 19th to April 23rd, 2020 in Anaheim, CA*
- ASME AM Medical Additive Manufacturing & 3D Innovations – *May 27th & 28th, 2020 in Minneapolis. MN*
- https://event.asme.org/AM-Medical?_ga=2.106579136.2109177329.1581010631-1170165851.1578507399

- 3MF Consortium

- <https://www.3mf.io>



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Next Steps



Next Steps

- IPP Encrypted Jobs and Documents v1.0 (Mike/Smith)
 - Prototype draft in Q3 2020
- IPP Enterprise Printing Extensions v2.0 (Smith)
 - Prototype draft in Q2 2020
- IPP Everywhere and Self-Certification v1.1 (Mike/Smith)
 - Stable working drafts/beta tools in Q1 2020
- IPP Driverless Printing Extensions v2.0 (Smith)
 - Prototype draft in Q2 2020
- IPP Label Printing Extensions v1.0 (Mike)
 - IPP WG approval in Q1 2020
- IPP Production Printing Extensions v2.0 (Mike)
 - Stable draft in Q2 2020
- Job Accounting with IPP v1.0 (Mike)
 - Prototype draft in Q2 2020



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, February 13 and 27, 2020 at 3pm ET