



The Printer Working Group

IPP Workgroup Session, Day 1

November 20, 2019

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)



November 20, 2019 (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 System Service v1.0 |
| 12:00 - 13:30 | IPP WG: IPP Enterprise Printing Ext v2.0 |
| 13:30 - 14:00 | Break |
| 14:00 - 15:00 | IPP WG: IPP Production Printing Ext v2.0 |

Agenda (2/2)



November 21, 2019 (US Mountain Standard Time)

| When | What |
|---------------|---|
| 09:00 - 11:00 | IDS WG: Status and Discussion |
| 11:00 - 11:30 | Lunch |
| 11:30 - 12:30 | IPP WG: IPP Driverless Printing Ext. v2.0 |
| 12:30 - 13:30 | IPP WG: Job Accounting with IPP v1.0 |
| 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, 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 v1.0
 - Michael Sweet (Apple) – IPP Encrypted Jobs and Documents v1.0, IPP Everywhere v1.1, IPP Everywhere Printer Self-Certification Manual v1.1, IPP Production Printing Extensions v2.0, IPP System Service v1.0, 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



- **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 System Service v1.0 - Formal Vote
- **IPP Best Practices in development:**
 - Job Accounting with IPP v1.0 - Interim
- **Recently published:**
 - PWG 5100.7-2019: IPP Job Extensions v2.0
 - 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 5100.16-2015 (Transactions): 3 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 5100.20-2016 (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 Q4 2019/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



- The UK Government has formed a workgroup for printing:
 - <https://3.basecamp.com/4322319/>
 - Anyone can join
- The purpose of this workgroup is to determine requirements and technology needed for printing in UK Government offices
- The leader of this effort (Keith Houghton) approached Michael Sweet and Ira McDonald concerning recommended standards, including IPP
- Ira and Mike attended the initial BoF meeting on October 28, 2019
 - Many vendors as well as government representatives were present
 - Focus is on multi-vendor "follow me" print solutions with a variety of authorization services supporting printing from any client OS (mobile and desktop)



Release Printing with IPP

- With some consultation with Ira and Smith, Mike produced a draft slide deck on release printing with IPP:
 - <https://ftp.pwg.org/pub/pwg/ipp/white/ReleasePrinting-20191118.pdf>
- This slide deck has been shared with the new GovPrint workgroup, but not yet presented



The Printer Working Group

Lunch Break

Resuming at 11:30 MDT



IPP System Service (SYSTEM) v1.0

- Current stable draft at:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippssystem10-20190814-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
- Also includes attributes from PWG 5110.1: Hardcopy Device Health Assessment Attributes
- Prototyped in ippsample project, PWG WG Last Call completed
- PWG Formal Vote ends November 22, 2019

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 Q4 2019/Q1 2020



IPP Production Printing Ext. v2.0

- Current prototype draft:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippppx20-20190923-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 2020



The Printer Working Group

Break

Resuming at 14:00 MDT



The Printer Working Group

IPP Workgroup Session, Day 2

November 21, 2019

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IPP Driverless Printing Extensions v2.0



- Current interim draft:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippnodriver20-20191121-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 Q4 2019/Q1 2020



Job Accounting with IPP v1.0

- Interim draft:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippaccounting10-20191023.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
- Next slides:
 - Survey on the pwg-announce and IPP mailings lists
 - Informed consent and optional metadata
- Proposed schedule:
 - Prototype draft in Q1 2020



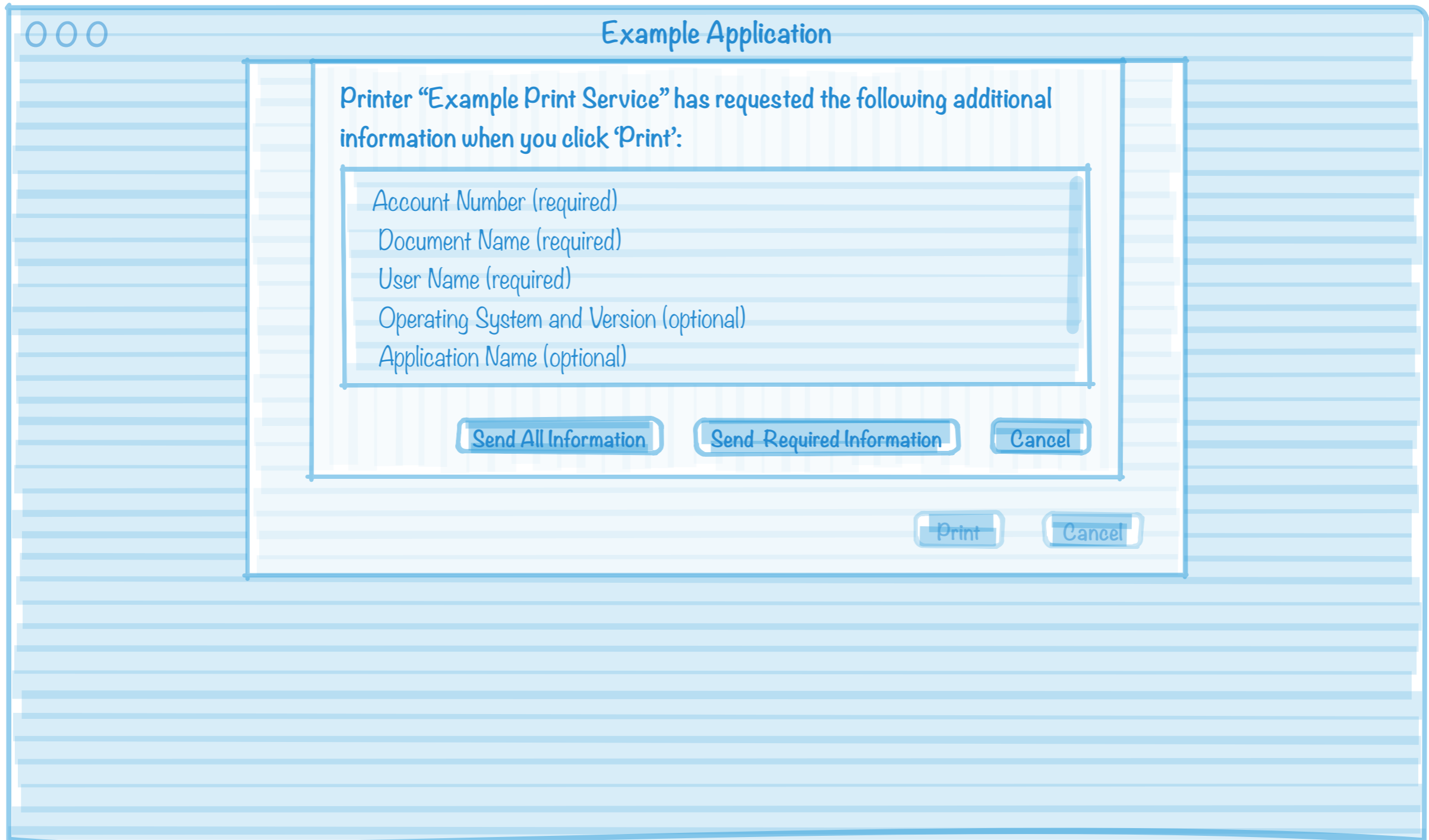
- Posted a request for comments to the pwg-announce and IPP mailing lists:
 - <https://www.pwg.org/pipermail/pwg-announce/2019/003899.html>
 - <https://www.pwg.org/pipermail/ipp/2019/020275.html>
- Received four responses so far
 - Consensus is that the current set of IPP operation and Job Template attributes can provide all of the metadata needed
 - One wants tighter security - OAuth for authentication and stricter policies for TLS certificates, with self-signed certificates seen as a security issue
 - Two want a clearly defined workflow for accounting - what attributes to use, what authentication to use, TLS requirements, etc.
 - One expressed a desire to treat an authenticated identity separate from an accounting identity
 - Metadata can be required, e.g. an account number for billing, or "nice to have", e.g. what applications are being used

Informed Consent and Optional Metadata (1/2)



- How to balance vendor and site needs/requirements with user privacy/regulatory (GDPR and others) compliance?
 - Vendor/site needs can vary significantly
 - Users need to know what information is being supplied and what is done with it, so that they can provide informed consent
- Printer (print service) can already list required attributes with "printer-mandatory-job-attributes (1setOf keyword)"
Printer Description attribute
 - New "printer-requested-job-attributes (1setOf keyword)" Printer Description attribute to list attributes that the Printer would like to see but are not required for Job submission
 - Currently defined in the Job Accounting with IPP document, but could be moved to the IPP Driverless Printing Extensions (update of JPS3)
- Client can query these attributes prior to Job submission and display a consent dialog for the user

Informed Consent and Optional Metadata (2/2)





The Printer Working Group

Break

Resuming at 14:00 MDT



3D Printing Liaisons (1/2)

- America Makes
 - <https://www.americamakes.us/>
- 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 INCITS (supports US TAG)
 - ISTO working with INCITS to engage with official PWG liaison agreement
 - INCITS also working on "4D printing" (moving parts)
- 3D PDF Consortium
 - <https://www.3dpdfconsortium.org>
 - Y.1447 semantics are not fully aligned with PWG semantics



3D Printing Liaisons (2/2)

- 3D Concrete Printing Standards Development
 - ACI, ASTM, NIST
 - September 2019 - NIST meeting in Gaithersburg MD
 - November 21-22, 2019 - 1st Int'l Conference on 3D Printing & Transportation - Wash, DC
 - <http://www.cvent.com/events/1st-international-conference-on-3d-printing-and-transportation/event-summary-2668ecc14e21461c962dc49841c84aee.aspx>
 - Transportation Research Board (high precision manufacturing)
 - July 6-8, 2020 - Digital Concrete 2020 - Eindhoven University, Netherlands
 - <https://digitalconcrete2020.com/>
- 3MF Consortium
 - <https://www.3mf.io>



The Printer Working Group

Next Steps



Next Steps

- IPP Encrypted Jobs and Documents v1.0 (Mike/Smith)
 - Prototype draft in Q1 2020
- IPP Enterprise Printing Extensions v2.0 (Smith)
 - Prototype draft in Q4 2019/Q1 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 Q4 2019/Q1 2020
- IPP Production Printing Extensions v2.0 (Mike)
 - Stable draft in Q1 2020
- IPP System Service v1.0 (Ira/Mike)
 - PWG Formal Vote ends November 22, 2019
- Job Accounting with IPP v1.0 (Mike)
 - Prototype draft in Q1 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, December 5 and 19, 2019 at 3pm ET