The Printer Working Group

IPP Workgroup Session, Day 1

November 3, 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
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November 3, 2020 (US Eastern Standard Time)

When	What
10:00 - 11:15	PWG Plenary
11:15 - 11:30	IPP WG: Status
11:30 - 12:00	IPP WG: Job Accounting with IPP v1.0
12:00 - 12:30	Lunch
12:30 - 13:00	IPP WG: IPP INFRA and Cloud Proxy Registration
13:00 - 13:30	IPP WG: Production Printing Extensions v2.0
13:30 - 14:00	IPP WG: IPP Everywhere Evolution

November 4, 2020 (US Eastern Standard Time)

When	What
10:00 - 12:00	IDS WG: Status and Discussion
12:00 - 12:30	Lunch
12:30 - 14:00	IPP WG: IPP Enterprise Printing Extensions v2.0

November 5, 2020 (US Eastern Standard Time)

When	What
10:00 - 12:00	IPP WG: IPP Driverless Printing Extensions v2.0
12:00 - 12:30	Lunch
12:30 - 13:45	IPP WG: 3D Liaisons: Status and Guidance
13:45 - 14:00	IPP WG: Next Steps

- Current charter:
  - https://ftp.pwg.org/pub/pwg/ipp/charter/ch-ipp-charter-20170615.pdf
- New draft charter:
  - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ipp-charter-20201009-rev.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, the PWG MIBs, and handle synchronization with changes in IPP

Officers

- 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 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

- PWG Specifications in development:
  - IPP Encrypted Jobs and Documents v1.0   - Prototype
  - IPP Enterprise Printing Extensions v2.0   - Interim
  - IPP Driverless Printing Extensions v2.0   - Interim
  - IPP Production Printing Extensions v2.0   - Prototype

- IPP Best Practices/Registrations in development:
  - Job Accounting with IPP v1.0   - Stable, PWG Last Call

- Recently published:
  - IPP Label Printing Extensions v1.0 (registration)
  - IPP System Service Discovery v1.0 (registration)
  - PWG 5100.14-2020: IPP Everywhere v1.1
  - PWG 5100.16-2020: IPP Transaction-Based Printing Extensions v1.1
  - PWG 5100.20-2020: IPP Everywhere Printer Self-Certification Manual v1.1

- 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~~ **533** printers currently listed
  - 1.0 self-certification tools update 5 in June 2020, approved August 2020
  - 1.1 self-certification tools update 2 **approved October 2020???**

- IPP Sample Code:
  - Github repository:
    - https://github.com/istopwg/ippsample
  - Fork of CUPS code includes ipp3dprinter, ippeveprinter, ippfind, ippproxy, ippserver, ipptool, ipptransform, and ipptransform3d

- Pending Errata:
  - PWG 5100.1-2017 (Finishings v2.1): 3 issues
  - PWG 5100.5-2019 (Document Object v1.1): 4 issues
  - PWG 5100.6-2003 (Page Overrides v1.0): 2 issues
  - PWG 5100.7-2019 (Job Extensions v2.0): 5 issues
  - PWG 5100.8-2003 ("-actuals" v1.0): 1 issue
  - PWG 5100.9-2009 (Printer State Extensions v1.0): 2 issues
  - PWG 5100.12-2015 (IPP 2.0, 2.1, and 2.2): 2 issues
  - PWG 5100.15-2014 (FaxOut v1.0): 2 issues
  - PWG 5100.18-2015 (Infrastructure Extensions v1.0): 6 issues
  - PWG 5100.19-2015 (Implementor's Guide v2.0): 6 issues
  - PWG 5100.22-2019 (System Service v1.0): 2 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): 7 issues
  - PWG 5100.13-2012 (JPS3 - Driverless Printing): 15 issues

IPP Everywhere Self-Certification

- Resources:
  - https://www.pwg.org/ipp/everywhere.html (for info)
  - https://www.pwg.org/ippeveselfcert (tools and submission instructions)
  - https://www.pwg.org/printers (printer list)
  - https://github.com/istopwg/ippeveselfcert (Github repo)
- Released v1.0 Update 5 of self-certification tools on June 17th, 2020 (approved on August 13th, 2020)
  - v1.0 is tracking CUPS 2.2.x (previous stable branch)
- Released v1.1 Update 2 tools on October 7th, 2020 **(approved on October 22nd, 2020???)**
  - v1.1 tracks CUPS 2.3.x (current stable branch)

Job Accounting with IPP v1.0

- Stable draft:
  - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippaccounting10-20200827.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
- In PWG Last Call, ends November 6, 2020 at 10pm PST
  - https://www.pwg.org/pipermail/pwg-announce/2020/003934.html
  - **We still need responses for quorum!**

The Printer Working Group

Lunch Break

Resuming at 12:30 EST

- Discuss known errata for IPP INFRA
  - Confusion between Register-Output-Device (IPP SYSTEM) which potentially creates a Printer object and Update-Output-Device-Attributes (IPP INFRA) which updates an existing Printer object
    - Future update to include forward reference to IPP SYSTEM
  - X.509 certificate authentication
    - Probably not useful between Client and Infrastructure Printer as most IPP Clients do not support providing X.509 credentials in the TLS handshake
    - Proxy to Infrastructure Printer *is* useful
      - Self-signed is OK because we authenticate the certs with HTTP auth and are not using the certificate part for anything other than identity comparison
      - Use a separate certificate for each output device managed by the Proxy
      - Registration/pairing of certificates is initiated out-of-band (embedded web server or other interface on the Printer) - probably with Register-Output-Device request
        - Cloud interface can provide a way to delete/revoke output devices, monitor activity, etc. - this is useful for printers that die
  - Recommended auth methods: OAuth 2.0 and/or X.509 Certificates

- IPP Registration for X.509 certificate registration/pairing
  - "output-device-x509-certificate (1setOf text(MAX))" operation attribute for Register-Output-Device
  - "output-device-x509-certificate-supported (boolean)" System Description attribute
  - Maybe an "output-device-database (1setOf collection)" Printer Status attribute as a replacement for "output-device-supported (name(127))" and "output-device-uuid-supported (1setOf uri)"
    - Member attributes would be "output-device-name (name(127))", "output-device-uuid (uri)", and "output-device-x509-certificate (1setOf text(MAX))"

- Prototype draft:
  - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippppx20-20200817-rev.pdf
- Awaiting prototyping
- Proposed schedule:
  - Stable draft and last call Q1 2021

IPP Everywhere Evolution

- Expect to have several members' printers listed soon!
- Thinking about v2.0
  - Make current RECOMMENDED attributes REQUIRED or CONDITIONALLY REQUIRED
    - General attributes: "job-mandatory-attributes-supported","job-presets-supported", "job-privacy-xxx","jpeg-xxx-supported", "max-page-ranges-supported", "pdf-xxx-supported", "print-content-optimize-xxx", "print-scaling-xxx", "printer-current-time", "printer-dns-sd-name", "printer-firmware-xxx", "printer-input-tray", "printer-output-tray", "printer-privacy-policy-uri", "printer-strings-xxx"
    - Job Accounting and Transaction attributes: "charge-info-message", "job-account-id-xxx", "job-account-type-xxx", "job-accounting-user-id-xxx", "job-authorization-uri-xxx", "job-charge-info", "job-impressions-estimated", "printer-charge-info-xxx"
    - Enterprise attributes: "job-password-xxx", etc.
  - Make IPPS/TLS support REQUIRED (all current 1.0/1.1 printers do)

The Printer Working Group

IPP Workgroup Session, Day 2

November 4, 2020

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November 4, 2020 (US Eastern Standard Time)

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IPP Enterprise Printing Extensions v2.0

- Current interim draft:
  - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippepx20-20200815-rev.pdf
- Update of PWG 5100.11-2010: IPP Job and Printer Extensions - Set 2 (JPS2)
  - Obsoleted "job-save-disposition (collection)", replaced by new Job Storage feature
  - Obsoleted "pages-per-subset (1setOf integer(0:MAX)), replaced by "job-pages-per-subset (integer(1:MAX))" in 5100.1
  - Deprecated "proof-print (collection)", replaced by "proof-copies (integer(1:MAX))"
  - Obsoleted "sheet-collate (type2 keyword)" - base attribute from RFC 3381 is obsolete
  - Added "job-release-action (type2 keyword)" to support Job Release
  - Some non-enterprise-specific attributes were moved to PWG 5100.7
- Proposed schedule:
  - Prototype draft in Q4 2020

The Printer Working Group

IPP Workgroup Session, Day 3

November 5, 2020

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12:00 - 12:30	Lunch
12:30 - 13:45	IPP WG: 3D Liaisons: Status and Guidance
13:45 - 14:00	IPP WG: Next Steps

IPP Driverless Printing Ext v2.0

- Current interim draft:
  - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippnodriver20-20200204-rev.pdf
- Updates PWG 5100.13-2012: IPP Job and Printer Extensions - Set 3 (JPS3)
- Proposed schedule:
  - Prototype draft in Q1 2021

The Printer Working Group

Lunch Break

Resuming at 12:30 EST

- 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
  - The IEEE-ISTO Printer Working Group standardization efforts intersect with the activities of at least two ASTM F42 subcommittees.
    - Subcommittee F42.08 Data
    - Subcommittee F42.91 Terminology
  - The purpose of the liaison agreement is to keep the standardization efforts of ASTM F42 and the IEEE-ISTO PWG synchronized in areas where both organizations are actively working.
- 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)
  - Two upcoming meetings will discuss 3D PDF and possible Common Criteria security profiles

- PDF Association + ISO/IEC TC171 WG12 Metadata
  - https://www.iso.org/committee/53674.html
  - PDF Association is serving as the US TAG, replaces 3D PDF Consortium
- Society of Manufacturing Engineers (iRAMP)
  - Interactive Rapid Additive Manufacturing Portal
  - https://www.sme.org/iramp/
- 3D Concrete Printing Standards Development
  - ACI, ASTM, NIST
  - Future (2020?) massive WebEx with PWG and others on concrete printing
  - July 6-8, 2020 - Digital Concrete 2020 - Eindhoven University, Netherlands (online only)
    - https://digitalconcrete2020.com/
- 3MF Consortium
  - https://www.3mf.io

3D Liaisons: Strategies

- Still a lot of churn over what 3D file format to use for 3D printing
  - 3MF, AMF, multiple PDF variants, and different medical formats are still being discussed/debated
  - STEP-NC embedded in PDF seems to be the most likely ISO candidate for general manufacturing
  - From an IPP perspective, we don't care as long as we can identify the format with a MIME media type
- Metadata is more important
  - Obviously we would like to see an intent-based Job Ticket, Job Receipt, etc. based on the IPP Model/PWG Semantic Model
    - A process-based Job Ticket, etc. would create the same impedance mismatch that we have with JDF for 2D printing...
  - Already have the XML schema based on IPP 3D, and it can be embedded in multiple 3D file formats
  - Seem to have some support in other standards bodies for this approach

The Printer Working Group

Next Steps

Next Steps

- IPP Encrypted Jobs and Documents v1.0 (Mike/Smith)
  - Prototyping 2021?
- IPP Enterprise Printing Extensions v2.0 (Smith)
  - Prototype draft in Q4 2020
- IPP Driverless Printing Extensions v2.0 (Smith)
  - Prototype draft in Q1 2021
- IPP Production Printing Extensions v2.0 (Mike)
  - Stable draft in Q1 2021
- Job Accounting with IPP v1.0 (Mike)
  - PWG Formal Vote Q1 2021

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, November 19 and December 3, 2020 at 3pm ET