Internet Printing Protocol Meeting Minutes
November 2 and 3, 2021

Meeting was called to order at 10:45am EDT on November 2 and 10am EDT on November 3.

Attendees

Smith Kennedy (HP)
Jeremy Leber (Lexmark)
Ira McDonald (High North)
Michael Rhines (Qualcomm)
Anthony Suarez (Kyocera)
Michael Sweet (Lakeside Robotics)
Taiki Arai (Okidata)
Bill Wagner (TIC)
Uli Wehner (Ricoh)
Steven Young (Canon)

Agenda Items

1. Antitrust and IP policies, minute taker
   - https://www.pwg.org/chair/membership_docs/pwg-ip-policy.pdf
   - https://www.pwg.org/chair/membership_docs/pwg-antitrust-policy.pdf
   - Antitrust and IP policies accepted, Mike taking minutes
2. Status
   - https://ftp.pwg.org/pub/pwg/slides/ipp-wg-agenda-november-21.pdf
   - Update IP slides - PWG Document, not PWG standard
   - Update document links on slide 10
   - IPP Encrypted Jobs and Documents v1.0
     - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ipptrustnoone10-20210428-rev.pdf
   - IPP Enterprise Printing Extensions v2.0
     - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippepx20-20211101-rev.pdf
   - IPP Finishings v3.0
     - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippfinishings30-20211007-rev.pdf
   - IPP Production Printing Extensions v2.0
     - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippppx20-20211020-rev.pdf
     - Mike is working on his PDFio library to enable prototyping in ippsample
       - Also wants to eliminate the use of MuPDF - licensing and API compatibility issues
   - Deprecating IPP Print by Reference
     - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippdepuri10-20211020-

rev.pdf
  - Section 3.2.2: Drop "their" before Client software ("their" is ambiguous)
  - Next status: stable
  - Action: Mike to post updated DEPURI draft and start IPP WG Last Call ending December 15th, 2021
- Action: Mike to update templates to use datatracker URLs
3. IPP/2.x: Fourth Edition
  - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippbase23-20211020-rev.pdf
  - Update in progress for RFC 7525:
    - https://datatracker.ietf.org/doc/draft-ietf-uta-rfc7525bis/
  - Also update in progress for TLS 1.3 RFC
  - Table 1: Drop PWG 5107.2
  - Section 5.1:
    - Drop #3 - PWG5107.2 (not needed for IPP)
  - Section 5.2:
    - Drop #4 - PWG5107.2 (not needed for IPP)
  - Section 5.3:
    - Drop #8 - PWG5107.2 (not needed for IPP)
  - Remove 5107.2 from references
  - Section 9:
    - Add reference to IPP Authentication BP, make sure we have IIG 2.0
  - Section 10.1:
    - "The attribute VALUES defined ..."
    - "in the following LOCATION:"
  - Section 11.1:
    - Add IPP Authentication
  - Section 11.2:
    - Move IIG 1, IIG 2, and UTA to normative references
  - Section 2.x/Section 4:
    - IPP/2.0 is a Workgroup Printer
    - IPP/2.1 is an Enterprise Printer
    - IPP/2.2 is a Production Printer
    - Defined terms using language from use cases and model
4. IPP Everywhere v2.0
  - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeve20-20211021-rev.pdf
  - Section 2.4:
    - Enterprise Printer: remove extra "conform to", copy new definitions from BASE and reference PWG5100.12
    - Enterprise, Production, and Workgroup Printer definitions referencing 5100.12
  - Action: Mike to post definitions of Enterprise, Production, and Workgroup printers to mailing list
  - Also use these terms in EPX, PPX, and NODRIVER
  - Section 4.2.4:
    - Fix table reference
  - Section 5.2

- Table 4: Get-User-Printer-Attributes is spelled wrong
- Q: Should we remove Print-Job?
    - A: Sure, everyone does but we want people to use Create-Job + Send-Document
- Q: Do we want to require Get-User-Printer-Attributes for all Clients?
    - A: Maybe but some OS's still won't support it
    - Currently no way to validate Client implementations
- Add Get-Printers for print servers
    - Section 5.3:
        - PRESETS -> 5100.13
        - jpeg-xxx, pdf-xxx, and printer-dns-sd-name moved to 5100.13
    - Section 5.5:
        - Add client-info for job accounting
        - Move table 8 attributes to table 7, use note 3
    - Section 5.8
        - Table 11: print-scaling moved to 5100.13
    - Section 6:
        - Update PDF reference to 2.0
            - ISO 32000-2:2020 PDF/2.0 https://www.iso.org/standard/75839.html
            - This includes dozens of appendices including (Normative) Appendix I PDF Versions and Compatibility
        - May need to revisit pdf-features-supported for encryption or other optional/recommended/conditionally required PDF features
    - Will resume discussions on next day
5. IPP Driverless Printing Extensions v2.0
    - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippnodriver20-20210501.pdf
    - Section 2.x:
        - Job Creation Operation, Job Ticket, Kerberized Printing, Paid Imaging Services, Preset, Printer Event, Printer Resident: Printing Terminology
        - Printer Resident: Put quotes around URIs, reword without "printer-xxx-resource"
    - Section 4.8:
        - "a group of setting IS chosen"
        - "without End User engagement" (singular)
        - Drop "new" adjective from all attributes
        - "defined BY the Client"
        - "for a Client to AUTOMATICALLY select a Preset"
    - Section 4.9:
        - Replace first sentence with a deeper explanation of our print quality journey:
            - Want more control than "draft, normal, high"
            - Adding enums doesn't solve the problem (makes it worse)
            - Many attributes contribute to the visual processing of a Job
            - See discussion/text in wiki:
                - https://github.com/istopwg/ippsample/wiki/IPP-Print-

Quality-Discussion
- "defines THE "preset-category" member"
- Drop "new" adjective from all attributes
- Section 6.4.6:
  - "The Printer MUST generate a 45-octet 'urn:uuid:' URI [RFC4122] when it creates ..."
  - "A Client does not use this attribute"
- Section 6.5.8:
  - Move "when the End User selects a Preset" to the front of that sentence
  - Reword last sentence to be the Printer not providing conflicting values
- Section 6.5.8.1:
  - Provide references to the 4.x print quality and 6.5.8.3 examples
- Section 6.5.20:
  - Add 'iso-32000-2_2020' for 2020 version of PDF 2.0
- Section 6.5.22:
  - "For all unregistered keywords, the Printer SHOULD supply:"
  - "in EACH message CATALOG"
- Section 6.5.24:
  - "that specify processing ASPECTS such as"
  - "This enables a Client to present these attributes in a group to the End User."
  - Printer MUST NOT list attributes such as "media", "copies", "sides", "finishings", etc. that are not involved in visual processing of a Job.
  - Missing comma before "or 'resolution'.
  - "SYNTAX types"
- Global:
  - "columnar objects IN the prtXxxTable"
- Section 6.6.9:
  - Drop note 3, just list those deprecated's as note 2
- Global:
  - If you want to, add xxx-deprecated groups in the ABNF for any deprecated items
- Section 7.2:
  - "job-save-disposition" Job Template and associates attributes [PWG5100.11] are obsolete
- Global:
  - Check for old cruft, particularly in section 12
- Section 16.1: Use "example" style
- Section 16.x: Update registrations to match current text
- Section 17.1:
  - Client accounting information (capitalize)
  - "Updated use cases"
  - Clean out cruft
- Finished review of whole document!
- Next status should be "prototype" (no technical changes)

6. IPP Everywhere Self-Certification
   - Ira: What about INFRA?
     - Mike: Orthogonal since the INFRA Printer would be self-certified as a print server
     - Proxy is a third role to test/self-certify
   - Smith: Can we break these up into manageable pieces?
     - Ira: We could split off Enterprise and Production
     - Smith: Do a 2.1 for Enterprise, 2.2 for Production?
     - Ira: That would certainly line up with IPP/2.x
   - Ira: What about system service?
     - Mike: That's a small change to just test Get-Printers for a Client to get a list of IPP Everywhere printers
   - Consensus:
     - 2.0: Add tests + Get-Printers for print servers
     - 2.1: Add Enterprise
     - 2.2: Add Production
   - Mike: New document tests exceed ipptool capabilities, have code we could use to create a purpose-built application for submitting jobs/ simulating a client
     - Can use existing PDF/JPEG test files
     - Will query printer for capabilities and test the different combinations of formats and attributes
     - Don't even need a PDF interpreter - can generate simpler raster data for PWG raster
     - Tool would default to running all tests, could pick individual tests and/or write test files
   - Smith: Would be nice for ipptool to offer a way to only run a subset of tests
     - Mike: I think we have an existing CUPS/ippsample bug tracking that
     - Dependencies could be tricky!
   - Smith: What about requiring compression support?
     - Mike: Would need to require it in the spec, but we already test it in the tools.
   - Client side testing:
     - Mike: How far can we go for self-certification?
     - Smith: Maybe brand it as best practice/implementor's guide/ developer tool for Clients?
     - Mike: Have a lot of the pieces for this already, "virtual" printers like this are excellent development tools
     - Bill: What Clients are we talking about?
       - Mike: Different Linux desktop environments and ChromeOS for sure, but maybe Android and others?
       - Ira/Bill: Probably a good idea to reach out to different developers to gauge interest
       - Mike: At the very least, determine what (if anything) we can do to better support IPP clients?
     - Questions for client developers:
       - Are you interested in self-certification?

- Are you interested in tools to test your IPP client printing software?
- Are you aware of the IPP sample code and ippserver/ippeveprinter?
- If so, what are your requirements, what is missing from existing tools?
  - Bill: Presumably client developers will still need to deal with non-IPP printers?
    - Mike: True, but on Linux (at least) we are moving towards an IPP-native printing system with drivers pushed out to IPP printer applications that emulate IPP printers
  - Uli: A tool that can look at what the Clients are sending (particularly with encryption) is valuable. Can't use Wireshark (easily) with IPPS traffic, can't say whether my company would do client self-certification
- Smith: Would be useful to have a way to show the features a printer reports via IPP
  - Mike: Could extend ipptool to display arbitrary messages
7. Next Steps
   - EPX -> Q1 2022
   - PPX -> Should be prototyped, not sure the stable draft will be out
   - Jan 13 and 27, 2022 will have to focus on the February 2022 F2F content

Next Steps / Open Actions

- Next conference calls November 18, December 2, and December 16, 2021 at 3pm ET
- Action: Mike to post updated DEPURI draft and start IPP WG Last Call ending December 15th, 2021
- Action: Mike to update templates to use datatracker URLs
- Action: Mike to post definitions of Enterprise, Production, and Workgroup printers to mailing list
- Action: Paul to provide Mike with a list of important 3D organizations and projects for 2021-2022 (PENDING)
- Action: Paul to reach out to Pat at ASTM to determine contacts for IPP expansion (PENDING)
- Action: Mike, Ira, and Smith to develop IPP Everywhere value proposition content (PENDING, part of pending SC article content)