

Internet Printing Protocol Workgroup Meeting Minutes August 28-30, 2019

Meeting was called to order at approximately 10:15am MT on August 28, 2019.

Attendees

Cihan Colakoglu (Kyocera)
Sean Kau (Google)
Smith Kennedy (HP)
Jeremy Leber (Lexmark)
Ira McDonald (High North)
Michael Rhines (Qualcomm)
Michael Sweet (Apple)
Paul Tykodi (TCS)
Bill Wagner (TIC)
Rick Yardumian (Canon)

Agenda Items

1. IP Policy and Minute Taker
 - http://www.pwg.org/chair/membership_docs/pwg-ip-policy.pdf
 - IP policy accepted, Mike taking minutes
2. Status
 -
3. IPP Everywhere
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeve11-20190827-rev.pdf>
 - Fix spacing in tables
 - 5100.7 reference seems to be messed up...
 - Q: Hold up IPP Everywhere 1.1 (for EPX) or reference 5100.11 with footnote?
 - A: Possibly, let's see where things stand once the self-cert tools are ready
 - Fix BCP14 reference link
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeveselfcert11-20190827-rev.pdf>
 - Q: Is the new submission page up yet?
 - A: No, but it will be once the 1.1 beta tools are posted
 - Q: When will the new beta tools be available?
 - A: 1.0 update 4 the first week of September, 1.1 maybe the week after
 - Q: Does the 1.1 spec recommend /ipp/print as the resource path?
 - A: Yes, in section 5.4.1.
 - Make reference to this in introduction (section 1) and in overview of changes (section 14)
4. IPP Job and Printer Extensions - Set 3 v2.0

- <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippjobprinterext3v11-20190724-rev.pdf>
- Section 6.8.25:
 - Reword second paragraph as "This attribute is semantically equivalent to the 'o' attribute type in the LDAP User Schema [RFC4519]."
- Section 6.8.26:
 - Reword second paragraph as "This attribute is semantically equivalent to the 'ou' attribute type in the LDAP User Schema [RFC4519]."
- Drop X.520 reference
- Section 6.8.27.1:
 - Table 9: Drop SM Keyword column, expand MIB Object names with prefix
 - Drop "SNMP" from "SNMP prtOutputTable"
 - Add reference to ABNF file.
- Section 6.8.13:
 - Figure 4: Update example - MEMBER keyword print-color-mode FOO, MEMBER uri profile-uri BAR
- Section 6.8.31:
 - print-color-mode-icc-profiles
 - Reword as "this attribute is used for previewing the result of using vendor print-color-mode keywords" and drop all of the normative language. Still reference printer-icc-profiles for color management. Provide example(s).
- Section 6.8.31.1
 - print-color-mode (type2 keyword)
 - Reword accordingly.
- Section 6.8.31.2
 - print-color-mode-profile-uri (uri)
- Section 6.9.x: Drop READ-ONLY
- Section 6.9.1 (device-service-count):
 - Not used by client software
 - Not widely implemented (Mike found only 1 printer out of 10 in his lab that supported it)
 - Consensus is to deprecate this attribute
 - Add note in changes section that device-service-count is deprecated because of system service
- Section 6.9.3/4:
 - Reword second and third paragraph to be declarative without conformance words (the value is updated whenever a Printer Description attribute is changed)
- Global: Drop "SNMP" when referring to the Printer MIB
- Section 6.9.5.1:
 - Line 2004-2005: Fix sentence fragment
 - Table 9:
 - Change "SNMP Supply Object" to "Printer MIB Object"

- colorantname *is* REQUIRED, make sure ABNF reflects it
 - index should be OPTIONAL, make sure ABNF reflects it
 - Make all index properties DEPRECATED
 - Drop prtMarkerSuppliesColorantIndex, delete note 3
- US-ASCII reference should be visible ASCII RFC reference instead, change "charset" to "character set".
 - RFC 854 (NVT ASCII)
- Section 6.9.5.3:
 - Drop comment
 - Add red slash in samples for undefined colors
- Section 6.9.5.4, 6.9.6:
 - Go back to papi format "printer-supply= "...', "...',..."
- Section 6.9.7:
 - Comment resolved (all status attributes are read-only)
- Section 7.2:
 - Reference for media-col-database is the new 5100.7 spec
- Sections 7.9 and 7.10:
 - Move to EPX
- Section 8.2:
 - Keep these values here
- Section 8.5:
 - Some typos here in the table
 - Mike has some thoughts about an alternative scheme
- Global: references to media-col sections should instead point to PWG5100.7
- Section 10.4:
 - Comment resolved as per prior discussions (keep both)
- Section 11
 - Line 2614: "page-ranges" (plural)
 - Keep comment to wordsmith since RFC 8011 has some better definitions but not the examples
 - Smith to reach out to Mike and Ira for updated text
- Table 14:
 - "job-copies" is obsolete in the current 5100.7 specification, remove
- Section 12:
 - Remove job-cover-xxx and sheet-collate (not defined here)
 - Reword (see PWG 5100.7 Job Extensions v2.0)
- Section 13:
 - "The save-disposition attribute [PWG5100.11] is obsolete."
- Section 14:
 - Rebuild from current template (reference sections rather than attributes/values)
- Global: Add tables at the start of each attribute section with conformance summary
- Section 14.4:
 - Move up to section 4?, add discussion of TCP port being the same, then reference everywhere else we have a URI (strings, icons,

- profiles, etc.)
- "Printer Resident" as a term and a section that can be referenced.
- Avoid passive voice, talk about firewalls, etc. preventing access on alternate ports and addresses
- Section 16:
 - Add 16.1 "document-password" subsection to discuss document-password
- Completed document review - next draft can accept all changes
- Sync up:
 - Add 'enterprise' and 'production' values for "ipp-features-supported" (reference PWG 5100.EPX and PWG 5100.3-2019, respectively)
- 5. IPP Production Printing Extensions v2.0
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippxxx10-20190626-rev.pdf>
 - Section 2.4:
 - Add Accounting Sheet and Error Error to terms if needed
 - Add Cover Page and Separator Sheet to terms
 - Make sure Cover Page is distinguished from finishing Covers
 - Section 4.3:
 - Add figure showing the example graphically (with colors)
 - Section 5.1.1 (cover-back)
 - "Cover Pages are applied to the back of each Set"
 - Need to make it clear that a single Media Sheet that is imaged on none, one, or both sides of the sheet.
 - Q: Are cover-back and cover-front implemented?
 - Mike has never seen it on office printers
 - Can be implemented with "overrides"
 - But "cover-back" and "cover-front" make the intent of the document/content clearer
 - Consensus is to make it RECOMMENDED
 - Section 5.1.2:
 - Same changes as for cover-back
 - Section 5.1.3: RECOMMENDED
 - Section 5.1.4:
 - Ira will send Mike an alternative definition of signature
 - Q: Can 'signature' be standardized as-is if you cannot define its semantics?
 - A: Maybe deprecate - defer discussions to a future WG concall
 - Call for members to research their usage/support of imposition templates
 - Section 5.1.5:
 - Consensus is to make REQUIRED
 - Section 5.1.6:
 - Fix broken references
 - Consensus is to make DEPRECATED
 - Section 5.1.7:

- Consensus is to make REQUIRED
 - Section 5.1.8:
 - Consensus is to make REQUIRED
 - Section 5.1.9:
 - Consensus is to make REQUIRED
 - Section 5.1.11:
 - Consensus is to make REQUIRED
 - Section 5.1.12:
 - Consensus is to DEPRECATE
 - Section 5.1.13:
 - Consensus is to make REQUIRED
 - (Resumed on August 29 at 3:45pm MDT)
 - Section 5.1.14 to 5.1.??
 - Consensus is to make REQUIRED
 - Might have a problem of duplication of Figures 3 and 4
 - Fix broken references
 - Section 5.2.x:
 - Update conformance requirements per 5.1.x attributes
 - Section 5.2.19: Broken reference
 - Section 12.1:
 - Add deprecations and obsoletions
 - Make note of conformance changes
 - Q: Should IPP 2.0/2.1/2.2 just reference specs and not make additional requirements?
 - A: Maybe
 - Would greatly simplify the 5100.12 spec
 - Mike: Concerns about making conformance changes in the published spec
 - Downgrades (optional/deprecated/obsolete) are OK, making optional/recommended to required is not
 - Look at as a late 2020/early 2021 errata effort
 - Q: Should we add an ipp-features-supported value?
 - A: Yes, 'production' for conformance to the new version of this spec
 - Also 'enterprise' for the new EPX
 - Add to JPS3
 - Next status still interim in order to finalize imposition-template disposition, then we can go to prototype
6. IPP Encrypted Jobs and Documents v1.0
- <https://ftp.pwg.org/pub/pwg/ipp/whitepaper/wd-trustnoone-20190629-rev.pdf>
 - Fix link on slide 20
 - Section 2.4:
 - Encrypted Job: Look at dropping "public key", may want more tweaking
 - Job Ticket and Job Receipt: Work on this offline to normalize with the informal definitions in MFD Model and PJT (5108.07)?
 - Section 4:

- Line 327: "User-supplied Certificate" (Certificate not spelled right)
- Line 331: Reword "Because the encrypted IPP message uses" as "Because the IPP message is protected using ..." (or something along those lines)
- Add sub-sections for Job Tickets and Job Receipts
- Add Figures showing topologies/uses/capabilities of crypto
- Add sub-section providing a brief overview of PGP and its capabilities
- Make note that this applies equally to 2D [STD92] and 3D [PWG5100.21] printing.
- TLS provides protection/integrity in transit while OpenPGP provides protection at rest and for any data the Client feels is sensitive
- Q: Create-Job and Validate-Job are not protected, do we need them, too?
 - Interesting problem, but hard to do with infrastructure printers and passing messages to proxies
 - Is it important to be able to validate job ticket information securely?
 - Create-Job + Send-Document - can send job name securely in Send-Document request
 - Important use case is single-document printing
 - TLS is necessary?
 - Note as comment for future discussion in next revision of the document
- Section 5.1:
 - Clarify that End User private key can be used to sign the resulting message to prove it came from the End User
- Q: What about xxx-actuals, etc. being exposed?
 - Need to talk about it specifically in section 4: only job-id, job-printer-uri, and job-state-xxx are exposed without encryption, everything else is protected (by Printer and/or Proxy)
 - Maybe have a job-state-reasons value for encrypted jobs?
- Section 12:
 - Add subsection on Job Ticket and Job Receipt privacy
 - Talk about mandatory use of TLS
- Section 12.1:
 - Add reference to PGP and AEAD RFCs
 - <https://www.iana.org/assignments/aead-parameters/aead-parameters.xhtml#aead-parameters-2>
- Q: Any way to negotiate/reject PGP features?
 - A: Not normally, but maybe we can define something for IPP?
 - Will investigate and document, maybe add status code(s)
- Q: Are we talking about HTTP Proxies?
 - A: No, always IPP Proxies
 - Use IPP Proxy throughout
 - Make sure IPP Proxy is included in the figures showing the model/architecture

7. IPP System Service v1.0

- <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippssystem10-20190815.pdf>

- PWG Last Call ends September 13, 2019
- GSoC 2019 tests mostly complete, only difficult thing to test has Create-Printer since there are a fair amount of implementation-specific details for configuring a generic printer
- Section 7.3.31:
 - Value configured out-of-band, not configured via IPP (something like that)
 - Drop "undisclosed"
 - Add note concerning derivation - no "uri" syntax since there is no registered URI scheme for NTP or SNTTP
- 8. IPP Enterprise Printing Extensions v2.0
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippepe-20190701-rev.pdf>
 - Deferred, finished review of PPX instead.
- 9. Job Accounting with IPP v1.0
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippaccounting10-20190418.pdf>
 - Title: Add v1.0, "Working Draft"
 - Abstract:
 - "This document discusses how to use IPP attributes to perform job accounting."
 - This is a PWG Working Draft
 - Section 1:
 - "This document discusses how to use IPP to perform ..."
 - How to collect information using IPP in order to: with list
 - Section 2.2: Move Job Accounting, Metadata, and Personal Data to separate "Other Terminology" section
 - Section 3:
 - Q: Add references to STD92 and other specs that define attributes used for accounting
 - A: Yes
 - Section 3.1:
 - Q: Any other use cases?
 - A:
 - Section 3.1.1:
 - Submitting user
 - Submitting device
 - Submitting operating system, client software, application, etc. (architectures, versions, patches, etc.)
 - Q: Isn't privacy a big issue?
 - A: Absolutely
 - Also validity of/trust in information (is the client really running a particular version of OS or application?)
 - This document needs to specifically address these things
 - Talk about levels of trust for different use cases
 - Billing might require require validation, debugging not so much
 - Section 3.1.2:
 - Q: How is this implemented via IPP?
 - A: User identity plus document data

- Title: Print Restrictions
- Spell out intent things (color not allowed, booklets not allowed), content things (no photos,
- Also block printing vs. change to B&W, etc.
- Get-User-Printer-Attributes can be used by Client to see what is allowed
- Section 3.2:
 - Add Changing of Job Ticket based on Policy
- Section 4.1:
 - Add most authenticated user ID
- Q: Any members involved in their respective accounting solutions ?
 - Action: Mike to reach out to PWG membership asking for job accounting information that can be shared at the next PWG face-to-face meeting
- Defer future document updates until we get more information from other members

10. Errata Review

- PWG 5100.1-2017: IPP Finishings 2.1
 - Section 11.1 (changes) doesn't discuss the changes (editorial)
 - Potential deprecation of imposition-template member attribute depending on what happens in PPX
 - Action: Mike to file issue against 5100.1 for imposition-template
 - Low priority update
- PWG 5100.3-2003: IPP Page Overrides
 - Strictly editorial changes for a 1.1 errata
 - Because of document age, would need to adopt new template and have a lot of references updated as well
 - Q: What did we do for IPP Everywhere?
 - A: Self-cert does not require document-numbers since multiple document support is not required
 - Perhaps make sure that page overrides does not require multiple document support and makes document-numbers conditionally required for multiple document support
 - Propose for 2020
- PWG 5100.9-2009: IPP Printer State Extensions
 - Strictly editorial to match up with the registry
 - Q: Should we use an alternate suffix so things read nicely?
 - A: Maybe "-issue"? -fault and -error all seem too ominous
 - Will make a note in the MIB about this but keep the TC names the same
 - Will also need template and reference updates
 - Maybe for 2020
- PWG 5100.12-2016: IPP 2.0, 2.1, 2.2
 - Also remove attribute tables and just rely on conformance requirements of parent specs?
 - Issue: How to version this?

- 5100.10 was IPP 2.0
- 5100.12 was IPP 2.0 Second Edition
- 5100.12-2015 was IPP 2.0, 2.1, and 2.2
- Should be able to do this as a "simple" errata (no increased conformance requirements)
- STD 92 has addressed most of the issues that 2.0 targeted, with IPP Everywhere raising the bar
- 2.1 and 2.2 have not seen the same adoption/visibility
- Q: Should we refactor the separation of versions not on specific specs or attributes but on usage?
 - 2.0 is desktop/office printers
 - 2.1 is spoolers/print services
 - 2.2 is production/light production
 - A: Maybe, based on existing specifications so the conformance requirements have not changed
- Q: What overlap between this and EPX and PPX specs in development?
 - A: Lots of overlap, but it doesn't look like the current spec requires things from 5100.3-2001?!?
- Downgrade importance of minor version - that's what ipp-features-supported is for
- Smith: Beyond 2.0 is of no meaning without a certification program, we don't have a certification program for it...
 - Important to focus any update so that it is clear what each version represents: IPP 2.0/Everywhere can go on boxes, but what about 2.1 or 2.2 (no commodities and different marketing/technical disclosure requirements)?
 - For future discussion
- Maybe for 2021 (after the other errata updates are done)
- Define ipp-features-supported values for key features
- Also define what is Enterprise Printing, what is Production Printing, vs. Desktop/Office Printing
- PWG 5100.15-2014: IPP FaxOut Service
 - Maybe for late 2020/2021
- PWG 5100.16-2015: IPP Transaction-Based Printing
 - All issues are editorial, but technical issues as we go through job accounting discussions
 - Maybe for 2020 once issues are identified for job accounting?
- PWG 5100.18-2015: IPP Shared Infrastructure Extensions
 - Mostly editorial, just discussion about the device UUID issue
 - Late 2020
- PWG 5100.19-2015: IPP Implementor's Guide
 - Would be good to delay until after the other specs are updated (and then can be referenced)
 - Maybe for late 2020/2021

11. 3D Printing Liaisons and Topics

- Vertical software solutions:

- "Materialize" is common
- Extra cost for supporting hardware
- Slow recognition of value of standards
 - Having clients with standard 3D support would go a long way to advancing adoption
 - Also getting vertical solutions to adopt would be helpful
- Concrete printing
 - Project starting Sept 20th, working to use IPP and PWG Safe G-Code to share test files
 - Still in research phase to determine benefits
- How can we (PWG) support these efforts?
 - "Project management" activity?
 - Work with Microsoft to add IPP/Safe G-Code support to Windows 3D printing functionality?
 - Action: Paul to make a list of 3D printing projects for 2019-2020
- 3DHEALS in Boston:
 - Healing of kidneys via 3D bioprinting
 - How to specify job tickets for production in bioprinting
 - FDA representative is interested in PWG approach
- ISO JTC1 liaison is still stuck between ISTO and ISO...
 - One work item might be use to track - terms and software standardization (CAD/etc.)
- Looking to use 3D digital data for procurement, manufacturing, and QA
 - 6 months for old 2D paper method vs 6 weeks for 3D digital
- Q: Form liaison with 3D PDF consortium to develop Y.1447
 - A: Yes
- iRAMP:
 - Can we provide resources to do certification of IPP 3D printers
- Probably time to start working with 3MF Consortium to get 3D PJT examples up as well

12. 3D Printing Metadata BoF + 3D PDF

- ISO 21812 is the equivalent for 2D
- MT/CONNECT
 - <https://www.mtconnect.org/>
 - Standard interfaces/formats for manufacturing equipment
 - They publish through ANSI
 - Should we do a capabilities workshop for additive manufacturing?
- Q: What are experiences with PDF?
 - Mike:
 - 2D PDF for page description is great, metadata is often lost/ stripped during processing
 - 3D PDF is confusing - on the third 3D embedded format, plus different kinds of metadata.
 - How to differentiate 2D PDF with image of a 3D object vs. 3D PDF file?
- STEP (new 3D format for PDF) doesn't have any metadata format
 - Working to define it now...

- Q: Would it be helpful to have a white paper to explain things?
 - A: Might be if there was a specific sponsor to tailor the white paper content

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13. Next Steps

- 3D summary:
 - Make list of projects to consider in SC, form additional liaisons as needed and "see what sticks" to determine follow-on work
 - Current solutions are still vendor-specific and proprietary, slowing thinking about scaling and standardization
 - Lots of research in progress that will fuel future changes to IPP 3D and the model
- EPX: Still on track for Q3/Q4 2019
- JPS3v2: Q4 2019

Next Steps / Open Actions

- Next conference calls on September 12 and 26, 2019 at 3pm ET
- Action: Mike to reach out to PWG membership asking for job accounting information that can be shared at the next PWG face-to-face meeting
- Action: Mike to file issue against 5100.1 for imposition-template
- Action: Paul to make a list of 3D printing projects for 2019-2020
- Action: Mike to post updated System Service specification and start PWG Last Call ending September 13th or so (DONE)
- Action: Mike to update WD template for standard IPP/1.1 exceptions (PENDING)