

Internet Printing Protocol Meeting Minutes

August 17, 2021

Meeting was called to order at 3pm EDT.

Attendees

Taiki Arai (OkiData)
Ira Kaplan (Brother)
Smith Kennedy (HP)
Jeremy Leber (Lexmark)
Frank Martin (???)
Ira McDonald (High North)
Anthony Suarez (Kyocera)
Michael Sweet (Lakeside Robotics)
Paul Tykodi (TCS)
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
 - IPP Encrypted Jobs and Documents
 - Smith: Still looking for prototyping
 - IPP Everywhere Self-Certification
 - New B&W/monochrome logo: no objections, Mike to confirm with requester
 - Action: Mike to confirm that new B&W IPP Everywhere logo is acceptable with requester
3. IPP Finishings 3.0
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippfinishings30-20210808-rev.pdf>
 - Global: remove spaces after open quotes
 - Section 4.1: Resolved comment (keep text)
 - Section 4.2.8: Add mention of crimping as another way stitching is done
 - Section 5.1.2: "The "output-bin" Job Template attribute CAN be used ..."
 - Section 5.2.1: "the type of baling to apply to THE Media Sheets."
 - Section 5.2.1.2:
 - "specifies when Media Sheets are baled."
 - after-job: All Media Sheets produced by the Job are baled
 - after-sets: Each Set of Media Sheets are baled

- Section 5.2.6:
 - Line 903: "parallel to its Finishing Reference Edge" ("its" instead of "the")
 - Line 916: Add "attribute" after member
- Global: Check for "member" without "attribute" after it
- Section 5.2.7.1: Add bold and definitions for each keyword value (probably need to define what the front and back of media are well defined? maybe something in MSN2 or JOBEXT2?)
- Section 5.2.8:
 - Drop "operation" in front of status code
- Section 5.2.9:
 - "stitches, staples, or crimps"
- Global: Remove "operation" before "status code"
- Section 5.3:
 - Last sentence of first paragraph: Ignoring copies-default seems like the wrong thing to do...
 - Drop it, printer won't support copies so we don't need to specify it
 - "a single Set" (drop "copy or")
 - Line 1068: "be an even number, THEN the Printer's behavior ..."
- 4. IPP Production Printing Extensions
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippxxx20-20210817-rev.pdf>
 - Section 2.2:
 - Resurrect Finished Document
 - Finished Page: One side of a Media Sheet, ... one side of a Media Sheet
 - Maybe add a figure showing different Finished Pages
 - Section 4.2:
 - Figure 3: imposition-template applies to Media Sheet, x/y-image-xxx and image-xxx apply to impression
 - Maybe add more of Smith's examples from his slide deck
 - Q: Do deprecated attributes have conformance requirements?
 - A: Yes, conditioned on supporting the deprecated attribute
 - "This DEPRECATED attribute ..."
 - "If supported, a Printer MUST / SHOULD / MUST NOT / SHOULD NOT"
 - Section 4.5:
 - "job-complete-before" (not job-completed-before)
 - Say something about there not being an xxx-default attribute
 - Say something about when the estimates can be updated:
 - Can update [date-]time-at-processing-estimated while Job is in the pending or pending-held states
 - Can update [date-]time-at-completed-estimated while Job is in the pending, pending-held, processing, or processing-stopped states
 - Goal is not to have the values continuously update but to reflect current estimates at specific scheduling points

- Important to capture differences in estimated vs. actual dates and times
- Add to attribute definitions as well.
- Section 5.2.3:
 - Add reference to section 4.2/figure 3
- Section 5.2.7/5.2.8:
 - Analogous to job-hold-until/job-delay-output-until
 - Mention this is best-effort
 - Mention status codes from Job Creation requests
- Section 5.2.18 to 5.2.25:
 - Add reference to section 4.2/figure 3
- Sections 5.3.3 and 5.3.4: Fix broken refs
- Section 12.1:
 - Finishings 3.0
- Section 13.1:
 - Finishings 3.0 reference
- 5. IPP/2.x Fourth Edition
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippbase23-20210424-ref.pdf>
 - Section 9:
 - TLS/1.3 or later, UTA reference from STD92?
 - Add something about HTTP Basic and Digest support (required by STD92) for clients
 - Note: we need to do something about getting trusted certificates for IoT (.local) hostnames
 - Section 13:
 - Use https link for IPP WG web page
- 6. IPP Everywhere v2.0
 - Changes to current slide:
 - Add photo printing feature
 - Add IPP System Service requirement for IPP Everywhere Servers
 - What to do about MFD services?
 - IPP Scan isn't supported by MFDs, which use eSCL
 - How to deal with these?
 - Ira: Treat as non-job services?
 - Mike: IPP FaxOut is already supported by many MFDs
 - Smith: Print + Scan + Fax?
 - Mike: IPP Scan and IPP FaxOut already are based on IPP Everywhere
 - Ira: Make IPP Everywhere 2.0 print-only, defer IPP Everywhere MFD until IPP Scan is deployed
 - Defer cloud, finishings, auth methods, job release, job storage, etc. to 2.1
 - 2.0 = 1.1 + TLS + privacy + job account + system service for servers
- 7. IPP Driverless Printing Extensions v2.0
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippnodriver20-20210501.pdf>
 - Resumed at section 6.5.25

- Section 6.5.32:
 - printer-icc-profiles is used for client-side color management (sending device color to the printer) and color proofing (testing that document colors are in-gamut for a given printer) vs. previewing the color transform done by print-color-mode-icc-profiles
 - Other comments - paste in text from the 24th
- Section 6.5.34:
 - Change to "input sources"
- Section 6.5.34.1:
 - "These are not encoded in the values."
- Section 6.5.35:
 - Fix "supports printing printing"
- Section 6.5.39:
 - "output destinations"
 - Make offsetstacking CONDITIONALLY REQUIRED for output destinations that do jog offsets
 - Update note 2 to provide conditionally required condition
- Sections 6.6.3 and 6.6.4:
 - Add Printer Event to Section 2.x terminology (copy definition with informative reference to RFC 3995)
 - Drop RFC 3995 reference from these sections
- Section 6.6.9 (printer-supply)
 - Q: Does anyone implement colorantXXX?
 - Smith: HP does, at least for some printers
 - Mike: The EPSON at my house doesn't implement printer-supply at all
 - Consensus: Deprecate OPTIONAL colorantXXX keys
 - Deprecate markerindex
 - Q: What about Client conformance WRT parsing unknown keys?
 - A: Hard to require a client to not crash (should be obvious)
 - Note 1: "that does not"
 - Note 2: Drop "ordering"
- Section 6.6.9.1:
 - Drop colorantXXX values from examples
 - Use the same wording about values as in 6.5.39
- Section 6.6.12:
 - "A Client cannot use ..."
- Sections 7 and 8: Use template form (after additional semantics, one section with subsections), make sure they apply to this document
- Section 10.2: Delete (now in FIN 3.0)
- Section 17.1:
 - Update to be iana@pwg.org
 - Action: Mike to create iana@pwg.org alias on the PWG mail server
 - Copy change controller from Safe G-Code BP
- Section 17.x:
 - "in the following location" (from new template)
- Finished reviewing the whole document...

8. IPP Enterprise Printing Extensions v2.0

- <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippepx20-20210423.pdf>
- Section 4.4.2:
 - "as of this VERSION" or publication
 - Drop "despite it being ten years old"
- Section 5.1.1: comment resolved
- Section 6.1.1: Add reference to 12.1 for security considerations
- Section 6.1.2:
 - Move Secure Transport requirements to section 12.1 and add equivalent Printer MUST require Secure Transport when the value is 'none'.
 - Reference to 12.1 for security considerations
 - Forward reference to 7.1
- Section 6.1.3:
 - Split up first sentence starting on line 779
 - Wordsmith - maybe one sentence per requirement, confusing otherwise
 - Suggestion:
 - The Printer MUST set a newly created Release Job's "job-state" [STD92] to 'pending-held' to await release. The Printer MUST add keywords to "job-state-reasons" (section 8.2) corresponding to the release action. However, if the Release Job is also a Stored Job with "job-storage-disposition" specifying 'store-only' (section 6.1.4.2), then the Printer can set the Job's "job-state" to 'pending' if no other reasons prevent it from being a candidate for processing
 - No point in supporting job release with job storage = store-only
 - Job is not held, so printer either rejects the request or accepts but ignores job-release-action
 - Need to say something about mixing job-storage-disposition=store-only and job-release-action
 - job-release-action is for printing, if store-only is also specified then the printer returns either client-error-conflicting-attributes or successful-ok-ignored-or-substituted-attributes as appropriate
 - Note: A printer can move ... (instead of might)
 - "If a Client supplies ..." - make its own paragraph, say "job-release-action attribute" instead of "this attribute"
 - "then it does not supply the "job-password" ..." (instead of MUST NOT)
 - Use "job-release-action attribute" instead of "this attribute" past the second paragraph
 - Forward reference to 7.1
- 6.1.4:
 - "whose members" => "with members"
 - "and who has" => "and which End Users have"
 - Drop "the order of member attributes ..." stuff

- "This attribute can be used" instead of MAY
- Forward reference to 7.2
- Section 6.1.4.3:
 - "If ..., THEN it MUST ..."
 - this MEMBER attribute
- Sections 6.4.15.1, 6.4.15.2
 - Use values from example VCARD
- Section 6.4.15.3:
 - Fix broken reference
- Section 6.4.17:
 - "indicates" instead of "lists"
- Section 7.1:
 - "for the Create-Job, Print-Job, and Print-URI operations"
 - Massage secure transport stuff, reference section 12.1 and make sure it talks about job-password-encryption == 'none'
- Section 7.2:
 - Yes, really necessary, make sure that any semantic content in 6.1.4 is moved here
- Section 7.4:
 - ", then the Printer MUST support the Reprocess-Job operation with a Stored Job"
 - Drop DEPRECATED
- Section 7.5:
 - Drop DEPRECATED
 - Action: Mike to check whether an issue has been filed against RFC 3998 for the Reprocess-Job operation being deprecated
 - "If a Printer", "then the Printer MUST"
- Section 7.6:
 - Add forward reference to 12.1 for the Secure Transport stuff
 - "to have the Printer report whether the values are supported"
 - "MUST NOT return the "job-password" attribute VALUE ..."
 - Move a lot of this to the security considerations
- Section 8.2:
 - Fix CONDITIONALLY REQUIRED notes - either CONDITIONALLY REQUIRED [NNN], [NNN] REQUIRED for Printers that support ...
 - Add blank lines after conformance words in table
- Section 8.3.x:
 - "in response to a request" (drop "receiving")
- Section 10.x.y:
 - Make sure there is an "and" at the end of the second-to-last items in each list
- Section 10.2.x:
 - Thin out conformance requirements against Status and Printer attributes (nothing to conform to - Printer generates them)
- Section 12.1:
 - Add "job-password-encryption" to title
 - Talk about using secure transport when job-password-encryption is

'none'

- Finished review of document
- <https://ftp.pwg.org/pub/pwg/ipp/slides/ipp-epx-feature-compatibility-investigation-20200604.pdf>
 - Q: Do job-password, job-password-encryption, job-release-action get copied by Resubmit/Reprocess-Job
 - A: Yes
 - Mike: Might cause issues for Client that auto-generate random PINs for each print job
 - Smith: But those Clients are using the old semantics and are not doing stored jobs, probably would need to do something different for stored jobs if they were added
 - Important to document that the release action is "sticky", is a reason why you'd use a release action with a store-only job.

9. 3D Printing discussions

- Last year of intense virtual participation in the various standards bodies has identified where our efforts are best focused in the near term:
 - Manufacturers and developers don't realize what is available
- Proposed focus for PWG liaisons in 2021-2022:
 - Continue AMSC and ASTM F42 participation (PWG work fits within the larger scope of their work)
 - Continuing virtual access to meetings
 - Evangelize PWG semantics and IPP 3D
 - Sign up for another year of membership in American Concrete Institute (ACI)
 - Continue G-code testing with IPP sample code
 - ACI + US Transportation Research Board now have infrastructure (WebEx, etc.) to host meetings for us
 - Continue working with PDF association for embedded Job Ticket/Receipt work
- Other organizations to monitor (but not actively work with):
 - SME 3D work has dried up
 - ASME is picking up the materials work
 - 3D HEALS is focused on biological printing
 - INCITS has been reduced to an advisory role
 - ISO/IEC JTC 1 TC199 WG 12:
 - Still working on 3D scanning, we still need to determine opportunities for standardization, file formats to use, etc.
- Workflow/orchestration in manufacturing is often using MT/Connect
 - Working on AM specs/protocols, might be able to work with them
- Action: Paul to provide Mike with a list of important 3D organizations and projects for 2021-2022
- Smith: We focus on intent over process, how does that relate to characterizing material properties? And are people thinking about process vs. intent?
 - Many are still focused on process
 - Bill: Still an issue of the maturity of devices, hard to easily map

- intent to process in some cases due to lack of experience, important to focus on intent as a way to increase usage (more reliable), they may not care about IPP
- Mike: Certain process-like attributes are there to bridge things until manufacturers gain enough experience
- Bill: 3D printing will likely have more custom materials that require additional configuration
- Paul: Mixing virgin and used powders can affect the final product, might need to specify additional material properties to get a specific quality for a job
- Bill: We can't be purists about intent, just as we haven't been purists for 2D
- Smith: Agreed, but we should evangelize the advantages of intent over process focused protocols
- Paul: Right now the interfaces are process-oriented, getting them to adopt intent has to be the first goal
- Smith: I think most of materials-col will go away
 - Mike: There are process-specific member attributes, but material-type, fill-density, and shell-thickness reflect the intent of the engineer that designed the part. Others are definitely things that will fade away as printers evolve
- Mike: Where do the proposed future 3D work items fit for the next year?
 - Paul: 3D Scan seems to map best to light scanners, but no clear standards for file formats yet
 - Bill: 3D Printing is a very broad range of devices, advantages of intent model are probably more accessible to consumer level printers vs. more complex manufacturing/production printers, still a very small market
 - Mike: Yes, we have to start somewhere!
 - Paul: Previous IPP prototyping in the field didn't work out, need to try to get them working on it for the next generation of products
 - Focus on PWG Semantics and PJT, intent-based model as most vendors are not ready to implement IPP
 - Consensus: Focus on reach-out with materials highlighting the advantages of the intent-based model, provide with sample code, etc.
- Smith: Also have some in-progress documents/articles for 3D, want to reboot that work
 - Mike: Complementary, blog articles to get people interested, standard/approved slide deck (based on existing one) for presentations that Paul gives
 - Bill: Profitability is the primary motivator, need to show that intent can lead to greater profitability
 - Paul: Will invite Boeing to an IPP WG session (they are interested in intent) so we can get feedback

1. Next Steps

- Continue 3D liaison work with AMSC, ASTM, ACI, and PDF Association,

- focus on evangelizing PWG Semantics and Intent Model (Steering Committee) Finish blog articles and update the 3D slide deck
- Keep TRUSTNOONE Q1 2022, needs to be prototyped!
 - Mike: S/MIME 4 can be implemented using all of the current TLS libraries
- Mike: Push IPP/2.x to Q1 2022
- Smith: Push EPX, FIN, and NODRIVER to Q4 2021
- Mike: PPX should be prototyped soon, Q3/Q4 2021

Next Steps / Open Actions

- Next conference calls September 9 and 23, 2021 at 3pm EST
- Action: Mike to confirm that new B&W IPP Everywhere logo is acceptable with requester
- Action: Mike to create iana@pwg.org alias on the PWG mail server
- Action: Mike to check whether an issue has been filed against RFC 3998 for the Reprocess-Job operation being deprecated
- Action: Paul to provide Mike with a list of important 3D organizations and projects for 2021-2022
- 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)