

# Internet Printing Protocol Workgroup Meeting Minutes February 5-6, 2020

Meeting was called to order at approximately 10am MST on February 5, 2020 and 11:30am MST on February 6, 2020.

## Attendees

Cihan Colakoglu (Kyocera Document Solutions)  
Sean Kau (Google)  
Smith Kennedy (HP)  
Jeremy Leber (Lexmark)  
Ira McDonald (High North)  
Michael Rhines (Qualcomm)  
Alan Sukert (Xerox)  
Michael Sweet (Lakeside Robotics)  
Paul Tykodi (TCS)  
Brian Volkoff (Ricoh)  
Rick Yardumian (Canon)  
Bill Wagner (TIC)  
Uli Wehner (Ricoh)

## Agenda Items

1. IP Policy and Minute Taker
  - [http://www.pwg.org/chair/membership\\_docs/pwg-ip-policy.pdf](http://www.pwg.org/chair/membership_docs/pwg-ip-policy.pdf)
  - IP policy accepted, Mike taking minutes
2. Slides:
  - <https://ftp.pwg.org/pub/pwg/ipp/slides/ipp-wg-agenda-february-20.pdf>
  -
3. IPP Everywhere
  - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeve11-20190827-rev.pdf>
  - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeveselfcert11-20190827-rev.pdf>
  - <https://istopwg.github.io/ippeveselfcert>
  - Be sure to include instructions for how to update a submission as well
4. IPP Production Printing Extensions v2.0
  - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippppx20-20200130-rev.pdf>
  - Section 5.1.3:
    - Line 536: "Printers can also merge the Impressions from multiple Documents and Jobs that use 'tile' to further..."
  - Just waiting on prototyping in ippsample
5. IPP Driverless Printing Extensions v2.0
  - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippnodriver20-20200204-rev.pdf>
  - Abstract: Rewrite
    - Avoid "fidelity" since that can be confusing vs. ipp-attribute-fidelity

- "This specification defines new attributes, values, and operations to support features, capabilities, and status information traditionally associated with model-specific drivers."
- Section 1:
  - Use one-line abstract as the first sentence.
  - "provide Printers" (singular)
  - Maybe break up into a few subsections with short summaries for capabilities, status, localization, etc.?
  - Talk about presets
  - Talk about what model-specific drivers do, to lead into section 3 and 4.
  - Always use Printer to talk about any imaging service
- Section 2.4:
  - Drop Document Content, any other terms that are no longer used here
  - Job Ticket: The operation and Job Template attributes supplied in a Job Creation request that provide the End User's intent for Job and Document processing as well as descriptive information about the Job and its Document(s).
  - Printer Resident: Hosted by the Printer. Usually used in discussing Printer resources. Maybe provide an example with an ipps: URI for IPP and https: URI for resources?
- Section 3.1:
  - "with a capabilities that match ..."?
  - "Therefore, this ... specification defines IPP extensions to support:"
  - Merge two sentences from lines 449 to 452...
  - Bullet 6: "Roll feed media"
  - Bullet 7: "Printer Resident message catalog resources for localization of attribute names, enum values, and keyword values;"
  - Bullet 9: Either "presets" or Presets (defined term)
- Section 3.2.1:
  - "in order of proximity"
- Section 3.2.2:
  - "visible or audible alert"
  - Or "Printer to flash a light or make a sound".
  - "to confirm she selected the correct Printer." (or something like that)
- Section 3.2.3:
  - Reword "control to print"
  - "available printers"
  - "less confusing" instead of "simpler"
  - Q: Don't we want to pick the address/interface?
    - A: No, since we might see advertisements for multiple addresses but not have access on all of those addresses, modern client code tries them all (e.g. Happy Eyeballs)
  - "the client software" instead of Client
- Section 3.2.4:
  - Drop comma before "and" in first and second sentences.

- Section 3.2.5:
    - Drop comma before "and" in first sentence.
    - Reword second paragraph - break up first sentence at least, drop "Job Ticket", etc.
  - Delete section 3.2.6 (now part of IPP Job Extensions v2.0)
  - Section 3.2.7: "Print a Password-Protected Document"
    - Q: What about entering the password at the printer?
      - A: Not something that we support at this time, no way to know whether a printer a) can do it or b) has an alphanumeric keyword to enter the password on
    - Q: Is this supported?
      - A: Yes, CUPS has supported for a long time
    - Q: Is this used?
      - A: Not a lot
  - Delete section 3.2.8 (now part of IPP Job Extensions v2.0)
  - Delete section 3.2.9 (now part of IPP Finishings v2.1)
  - Discuss: Potentially move the trim-after-xxx finishings enums and the print on roll-fed media and continuous printing use cases to a Finishings 2.x errata update!?
  - Section 3.2.13: Personalize
  - Section 3.2.15: Drop presets and Paula's impressions here
  - Section 3.2.16: Drop last sentence, "in between images", maybe add an illustration here?
  - Section 3.2.18: Personalize
  - Section 3.2.19: Drop advertising at end of paragraph., make as printing a photo and not a recipe, focus on what Ava sees (icon image matches the printer she sees, selected media shows that Vendor X Photo Paper is loaded, etc.)
    - Q: Can you use extensions for things other than media?
      - A: Yes, absolutely
      - Use cases after this one talk about this...
    - Q: Could we drop the media name from this use case so it is focused on the icon?
      - A: We could break into two - one for icons, one for vendor media types, then all of the other vendor extensions
  - Global: Check for unnecessary commas before "and"
  - Global: Client, Printer, etc. (capitalized)
  - Delete section 11 (now in STD92)
6. Job Accounting with IPP v1.0
- <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippaccounting10-20200129-rev.pdf>
  - Refining Use Cases/Requirements:
    - Smith:
      - Sometimes "job-account-id" and "job-accounting-user-id" are treated as generic text values that can be used for anything
      - Issue of trust was never discussed/ignored
    - Cihan:
      - Chris's point was that requiring both attributes breaks some

- existing clients
  - On Mopria side, we can handle not requiring both
- Interoperability is an issue between different proprietary IPP profiles?
- Q: Should we try to fix them or replace them?
  - A: Need to know what the use cases and requirements are to effectively replace them...
- Q: What about clients that only show these attributes if they are present in the printer-mandatory-job-attributes list?
  - Don't know that we can mandate behavior.
  - But important to make it possible for companies to implement a common standard and maintain legal compliance
- Q: Are there differences between guest and authenticated access?
  - A: Yes, but still have the same explicit consent and disclosure requirement
  - Printer may trust values from an authenticated client more than an unauthenticated one
- Q: Does the Client need to provide the printer with proof that the End User has provided explicit consent?
  - A: No, everything is local to the Client, with the Printer just providing a URL and lists of attributes
- Q: Does the Client need to trust the Printer?
  - A: Yes, and X.509 cert validation and UUID matching along with Identify-Printer can be used to establish limited trust
  - Printer can also authenticate Client (using various auth methods)
  - I don't think we want to require validation but definitely recommend
- Maybe have a use case for saving the last N values used for a better user experience?
- Q: Can a Printer reject a job with bad values?
  - Yes, client-error-attributes-or-values-not-supported at request time, job-state-reasons keyword after the fact
- Business/Legal issues:
  - Disclosure of attributes via Get-Job-Attributes or Get-Jobs might be limited (only available out-of-band), Job Privacy attributes support this, can be mentioned in privacy policy...
- Q: Would it be useful to get Mopria accounting use cases?
  - A: Yes
  - Action: Smith to contact Mopria for sanitized accounting use cases we can look at
- Would be nice to have a job-account-id-supported that wasn't a boolean...
- Identify Specific Attributes
  - "sides" isn't listed
  - "document-metadata"? Maybe, but not aware of any

- implementations of it...
  - "document-format-details" -> could transition to "document-metadata"
  - "job-impressions", "job-media-sheets", "job-pages": Can be supplied by Client, more typically filled in by Printer
  - How to Support Legacy Clients?
    - Q: First bullet, are we talking about the accounting system or the Printer?
      - A: The Printer - when the Client talks to the Printer it reports whatever information the accounting system needs
    - Typical configurations:
      - Dedicated printer that maintains detailed job history ("local accounting")
      - Printer that is locally configured to request additional information which is then collected separately by accounting system (Job MIB or IPP query)
      - Printer has integrated accounting system (e.g. Release Printing solution)
    - Hold behavior is like release printing, e.g., enter account ID on control panel to release
      - 'job-held-for-review' keyword already exists!
7. IPP Encrypted Jobs and Documents v1.0
- <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ipptrustnoone10-20200128-rev.pdf>
  - Discuss: Do we need an encrypted job-name with the Create-Job operation?
    - Q: Does job-name typically contain sensitive information?
      - A: Yes, often the document or web page title
    - Q: What would show up in a job listing?
      - A: Typically "unknown" or "withheld" if the job-name is encrypted
    - Harder to pick jobs for follow-me printing (no job name for user to see)
      - Haven't addressed console display/security
      - Security consideration - displaying might expose PII/ sensitive info
    - Q: What about logging?
      - IDS common log format doesn't include job-name, but has job-accounting-user-name
      - Might get leaked as part of message as well
    - Would be useful to have the encrypted job ticket separate from document data
    - Q: Maybe have an "encrypted-attributes (1setOf octetString)" operation that provides the encrypted Job Ticket information?
      - A: Consensus is that it would be more overhead than needed
    - Q: Doesn't the client have control over this?
      - A: Yes

- Could recommend a "public name" or "public ID" string for the job, provide UI?
  - Or a random PIN
  - Should not uniquely identify user, application, or document
  - Q: Do we have to worry about job-name containing information that would help decrypt the encrypted document data?
    - A: Probably not - we already know it will be an IPP message followed (likely) by a PDF
    - More an issue that knowing the job name might help an attacker focus on a particular job instead of all jobs
  - Consensus: Document that job-name is a public name for the job and is not encrypted. Provide implementation guidance that it should not default to the current document name or title
  - Figure 1:
    - Add job-name to each request, with different public and private job-name values for the encrypted request
  - Section 4.1:
    - Line 354-355: "encrypted hash" is confusing, maybe "matches the hash that was sent" or something like that.
    - Q: What about PGP with extra password or keys used?
      - A: Wanted to avoid the extra complications in an overview, but can mention it.
    - Break last two paragraphs into a separate section on how PGP is being used with IPP
    - Add another figure showing Client, Cloud, Printer, and bad actor in new IPP + PGP section
  - Section 12.1:
    - Q: Why require TLS?
      - A: Because otherwise you can do a replay attack with the PGP-encrypted document data and get a hardcopy of the document
    - Talk about replay attacks, recommend that clients require additional password, maybe talk about printers validating public key at printer? 2FA with NFC ID badge or biometrics?
  - Probably need an appendix/section showing the various workflows or use cases?
  - Add Section 12.x on PGP public key validation
    - To prevent MITM servers - you need to trust the end printer, not an intermediary
  - Smith: Will provide some diagrams/feedback/etc. for HP use cases
8. IPP Driverless Printing Extensions v2.0 (con't)
- <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippnodriver20-20200204-rev.pdf>
  - Section 3.5:
    - Remove blank lines
    - Fix section reference
    - Remove 12 (subset printing attributes)
    - Simplify the design recommendations - "Prefer Printer Resident

- resources ..."
- Mark Table 1 as removed before publication
- Section 4.1:
  - "can" instead of "would be able to"
- Section 4.2:
  - "high-level features" instead of "macro granularity features"
  - Drop "driverless" and use another feature.
  - "can" instead of "might"
- Discussion:
  - Need to decide whether we preserve the definition of feature keywords for historically-earlier documents (5100.3, 5100.11) in this document?
    - 'production' for 5100.3
    - 'enterprise' for 5100.11
- Section 4.3:
  - Drop policy enforcement
- Section 4.4:
  - "can" not "CAN" ;)
  - "See section 12.2 for Printer resource best practices." (or something like that)
- Section 4.7:
  - Drop or rewrite first paragraph
  - "UUID attributes"
- Section 5.1:
  - "the Printer MUST reject ..."
- Section 5.x:
  - Eliminate stray bullets
  - "List Paragraph" style in Word...
- Section 5.2:
  - Do we have a use case for this?
  - Action: Mike to review Validate-Document in NODRIVER
- Section 6.1.2:
  - "document format"
- Stopped at section 6.2.
- 9. IPP 3D Printing Liaisons
  - AMSC - RAPID 2020: No focus on standards this year...
  - SC - Want a press release for the INCITS liaison (they will likely do one as well)
  - ISO JTC1 - not much happening with scanning right now
    - Paul: Maybe we can do something like IPP Scan for 3D?
  - TC171 - not IEC, just ISO
    - First draft of best practice being posted/presented at April 2020 meeting
    - Paul will be presenting
    - SC - Need Category C liaison, explore IP concerns
  - Drupa 2020: Mike could prototype some things to provide Paul with videos and samples for the Cube presentation.

- 3D Concrete:
  - Added pressure sensors to print head, working to characterize working conditions for different mixes over time
  - Using G-Code and RapidCode (6-axis G-Code - position and rotation)
  - Ira: Should disable toll-free calling for the March WebEx
  - ACI 564 meetings will be talking about semantics and terminology - we should attend
    - Spring meeting is March 30th

#### 10. Next Steps

- Focus on IPP Driverless Printing on the 13th
- IPP Everywhere Self-certification on the 27th (and hopefully approve the Update 4 tools)

### **Next Steps / Open Actions**

- Next conference calls February 13 and 27, 2020 at 3pm
- Action: Smith to contact Mopria for sanitized accounting use cases we can look at
- Action: Mike to review Validate-Document in NODRIVER
- Action: Mike to post final stable draft of IPP TRANS 1.1 and start IPP WG last call (DONE)
- Action: Mike to post final stable draft of IPP Label 1.0 and start IPP WG Last Call (DONE)
- Action: Mike, Smith, and Ira to provide 3D printing liaison slide updates (PENDING - need to talk with Paul to determine which slides these are)