

Internet Printing Protocol Workgroup Meeting Minutes

May 15-17, 2018

Meetings were called to order at approximately 10:30am PT on May 15, 2018, 9am PT on May 16, 2018, and 11am PT on May 17, 2018.

Attendees

Danny Brennan (IBM)
Zdenek Dohnal (Red Hat - call in)
Gupta Gyaneshwar (Oki Data - call in)
Kris Iversson (Microsoft)
Till Kamppeter (OpenPrinting/Canonical)
Sean Kau (Google)
Smith Kennedy (HP)
Jeremy Leber (Lexmark)
Shirleen Lou (Google)
Ira McDonald (High North)
Rithvik Patibandia (call in)
Akash Sharma (call in)
Alan Sukert (Xerox - call in)
Michael Sweet (Apple)
Paul Tykodi (TCS - call in)
David Valleau (Google)
Michael Vrhel (Artifex)
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. ISTO:
 - Self-cert tools update 3 waiting on code signing certs (GoDaddy review)
 - Tools are built on local machines
 - Web site migration still in progress
3. IPP Sample code
 - Using Travis CI for macOS and Linux builds
 - Snapcraft for Linux packages
 - Adding AppVeyor for Windows builds
4. 3D Discussions:
 - 3D PDF:
 - Now working on a third object format for embedding (requested by CAD vendors)

- To support “Technical Data Package”
- Q: Something we need to address for IPP 3D v1.2?
 - A: Not until we address how to easily identify that a PDF contains 3D printable content vs. a 2D image of a 3D object.
- ISO STEP-NC - replacement for G-code, ISO 10303-242 (AP242) and 14649
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- 5. Safe G-Code
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-pwgsafegcode10-20180426-rev.pdf>
 - Abstract: Best Practice, not white paper
 - Section 3: Reword discussion of M commands - most not included for safety/privacy reasons
 - Keep vnd.pwg-safe-gcode registration, clarify “consuming device” instead of “consumer”, add reference to the current ISO standard for G-code.
 - File extension of gcode may be confusing, consider something else like “ippgc”
 - Check whether there is an existing IANA registration (don’t think so)
 - Add RS274NGC from NIST reference (Paul)
 - Post updated draft with “prototype” state
- 6. IPP 3D v1.1
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ipp3d11-20180426-rev.pdf>
 - Table 10: Add printer-volume-humidity
 - Rename “printer-volume-xxx” to “chamber-xxx” - that’s the terminology used for G-code.
 - Remove CONDITIONALLY REQUIRED from new attributes and make them a SHOULD support
- 7. access-x509-certificate
 - Consensus is to obsolete it.
 - Action: Mike to post registration template obsoleting access-x509-certificate
 - Such an attribute could be used for access control/validation, but not for authentication
- 8. IPP System Service:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippsystem10-20180504-rev.pdf>
 - Drop system-device-id
 - Update system-attributes-supported to reference printer-attributes-supported and allow ‘none’.
 - Update system-state as proposed
 - “system-state-message”: Make it OPTIONAL, talk about reflecting system-wide state.
 - “system-state-reasons”: For MFDs with one set of subunits, roll up the printer-state-reasons values. Otherwise just report reasons for the system object itself. Add system-specific reasons and list them here.
 - Add “printer-xri-requested (collection)” operation attribute for Create-Printer
 - Update references to semantic model elements to be “SM ElementName [REFERENCE]”, add SM to acronym list pointing to semantic model tech

page.

- Add Restart-One-Printer operation that preserve the state of the printer (idle/processing/stopped and is-accepting-jobs values)
- “xxx-owner-col”: Consensus is to adopt proposed changes
- Drop “job-owner-col”, “notify-owner-col”, and “resource-owner-col”
- “system-contact-col” and “printer-contact-col” RECOMMENDED (for someone to contact)
- Rename other “xxx-owner-col” to “xxx-contact-col” and “owner-xxx” member attributes become “contact-xxx”.
- “printer-contact-col” defaults to “system-contact-col” attributes. All member attributes required to support (but not to supply) if the attribute is supported. Provide recommendations on usage, etc.
- Drop “requesting-user-vcard”
- Make xxx-power-state as type1 enum
- Make timeout-predicate as type1 enum
- Abstract:
 - “This document defines an IPP binding of the System object, System Control Service, Resource Service, and registration operation as defined in various Semantic Model specifications (PWG 5108.06, PWG 5108.03, and PWG 5109.1).”
- Global: remove requesting-user-vcard from all operations
- Drop all system-uuid and system-xri-supported from responses (except for Get-System-Attributes)
- Register-Output-Device needs to return system-state/-reasons, talk about how it might change system state.
- Section 7.1.7:
 - Just “1 setOf collection”
 - “... and Register-Output-Device (section ...)”
- Section 7.2.39 (system-settable-...)
 - “The ‘none’ keyword value ...”
 - Drop last sentence about localization.
- Section 7.8.11 (resource-string-version)
 - Make text(MAX) | no-value
 - Say something about it being for executable resources
- Section 7.8.15 (resource-version)
 - Make octetString(64) | no-value
 - Say something about it being for executable resources
 - A hash could be used to populate this value.
- Add notify-resource-id Subscription Status and Event Notification attributes

9. IPP Encrypted Jobs and Documents

- <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ipptrustnoone10-20180328-rev.pdf>
- Q: Do we need unencrypted signing as well as encrypted and signed?
 - A: No, just do encryption
- Q: Do we want to define our own version of S/MIME or PGP?
 - There is some HTTP work in this area - RFC 8188
 - But it is a content encoding which won't work for us because we still

- need the initial part of the request visible
- A: No, we do not have the expertise, monitor updates to these specs and continue when possible
- Q: What if we do it as a “compression” encoding - just to cover the document data?
 - A: Could work, but doesn’t protect the rest of the job/document attributes
 - Need to define format - initial public key encrypted symmetric key followed by AES data.
- Action: Smith to post diagrams showing different encrypted job topologies
- Existing printers do encrypt job metadata, so we should encrypt both document data and metadata
- Most metadata would be considered transactional data, but still should be protected
- Encrypted metadata == need for a way to get encrypted job receipt
- Need way to specify disposition of document data/metadata after job processing
 - Retain, destroy, printer default?
- Action: Mike to post updated “mothball” draft of IPP Encrypted Jobs and Documents tracking current state

10. IPP Reprint Password

- <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippreprintpwd-20180424-rev.pdf>
- Section 1 (Introduction)
 - Move any mention of job-password to the end, incidental (both might be used to PIN-protect any prints from the MFP) and unrelated to the use case addressed by this registration.
 - Reference Job Save from 5100.11
 - Also talk about implicit saving of jobs and documents (e.g. all jobs saved for 24 hours, etc.)
 - job-reprint-password is just for printer console reprint requests
 - Job owner, admin, or operator can send a Reprint-Job/Resubmit-Job operation to reprint without the job-reprint-password (since the IPP operation is authenticated separately)
- Section 3: title should be “Rationale”
- Section 3.1.3: Remove
- Section 3.3:
 - Add “remote access for reprint”
- Section 4:
 - Talk about semantics: reprint means that a) the job has been processed and reached the completed state and b) the job has been saved (implicitly or explicitly)
 - Printers that accept job-reprint-password MUST (at least implicitly) save any job with job-reprint-password
- Section 4.1:
 - Lines 206-207: Break into two sentences.
 - Reword access - can’t get password with Get-Jobs or Get-Job-Attributes, but can get via Fetch-Job

- This operation attribute is used as a request attribute for the Create-Job, Print-Job, and Print-URI operations and as a response attribute for the Fetch-Job operation.
 - Reword last paragraph - drop “request” (operation attribute in request or response)
 - Section 4.2:
 - Semantically equivalent to job-password-encryption
 - This operation attribute is used as a request attribute for the Create-Job, Print-Job, and Print-URI operations and as a response attribute for the Fetch-Job operation.
 - Reword last paragraph - drop “request” (operation attribute in request or response)
 - Section 5.2:
 - Type2 keyword
 - Global: “Operation attribute” should be (lowercase) “operation attribute” (except in header titles...)
 - Section 5.3:
 - Semantically equivalent to “job-password-repertoire-supported”
 - Add “job-reprint-password-repertoire-configured” attribute
 - Section 6.1: “job-reprint-password”
 - Add Section 6.x: Fetch-Job
 - Section 8: Add references to PWG5100.11 and registration document for job-password-repertoire
11. IPP Everywhere v1.1
- <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeve11-20180417-rev.pdf>
 - Q: How long can vendors continue to submit 1.0 results after 1.1 is approved?
 - A: 12 months is OK
 - Q: Should we track firmware versions associated with the certification?
 - Tricky since many certs are done for a group of related devices
 - Goal is to have a way for customers to know whether they might need a firmware update
 - A: Maybe just add a check box to the submission portal indicating whether the printers originally came with IPP Everywhere support (so we can show an asterisk specifying a firmware update might be required)
 - Issue on portal: broken printer links, should have some way to update them
 - Issue on portal: should be possible to clone existing printers to “resubmit” when products are updated
 - Section 5.7:
 - Table 8 should be Table 9 - check xref
 - Section 14.1:
 - “Requirements for WS-Discovery ...”
12. IPP Everywhere v1.1 Self-Cert
- <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeveselfcert11-20180404-rev.pdf>
 - Ubuntu 18.04 LTS (not 17.04)

- Windows 7 (not 8)
- Bonjour: Do we want to call it DNS-SD?
 - Bonjour = mDNS + ZeroConf + DNS-SD
 - Perception of being Apple-only? Maybe rename to dnssd?
- Action: Mike to check on Bonjour trademark status
- Discuss at a later meeting

13. How to Use the Internet Printing Protocol

- <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippguide-20180430.html>
- Global: Drop summary sections
- Chapter 1:
 - “to ask the Printer about its capabilities and defaults...”
 - Avoid a lot of “inquire about”
 - Maybe list what the client can ask about?
 - Group CUPS and IPP Sample as a C IPP implementation
 - Add HP’s new Java implementation on Github
 - Talk about IPP offering more than port 9100 and LPD/lpr (“supersedes”)
 - Overview:
 - “The IPP architecture defines an abstract model for printing.”
 - Simplify discussion of POST, “binary message format”, separate security and encryption into a separate section
 - “Note:” in front of /ipp/print breakout.
 - Maybe move note into a separate section on discovery?
 - Link to appendix
 - IPP Encoding
 - Move IPP Operations before Encoding
 - Put quotes around the group names - “the ‘operation’ group”, “the ‘job’ group”, etc.
 - “First two attributes must be”, split definitions of the attributes into their own sentences.
 - “The next attributes must be”
 - “Most requests include the ‘requesting-user-name’ attribute that provides the name of the user.”
 - IPP Operations
 - Move discussion about there being a lot of operations after listing the common ones. Link to IANA registry.
 - Make Create-Job discussion a note, talk about Print-Job simplicity vs. Create-Job/Send-Document flexibility.
- Chapter 2
 - “Printers in IPP are objects that represent real or virtual (for saving, emailing, etc.) output devices.”
 - “Printer objects provide ...”
 - “(printing something, out of paper, etc.)”
 - “A printer objects also manages a queue of print jobs.”
 - “The string may also ... to tell the clients whether the reason affects the printing of a job.”
 - Add to note: These strings are keywords and are only provided in

- English. Talk about localization?
- Printer Description:
 - Change title to Printer Information Attributes
 - Move after the capabilities section
 - GPS location -> geographic coordinates with link to geo: URI RFC
- Printer Capabilities:
 - Provide examples for all attributes
- Querying the Printer Attributes:
 - Add requested-attributes
 - Add note at end about using requested-attributes to ask for specific attributes
 - Add document-format, add note about using document-format to get values for that format
- Chapter 3
 - “Print jobs in IPP are objects that represent work to be done by a printer.”
 - Drop third paragraph about multiple document support and the following note
 - Job Status:
 - “Job objects provide”
 - Move job-id, job-printer-uri, job-originating-user to general information
 - pending-held - “The job has been held (e.g. PIN printing)”
 - Add job-hold-until-specified reason to list of job-state-reasons.
 - Don’t talk about the starting job ID, etc.
 - Job Description:
 - Change title to Job Information Attributes
 - Job Template
 - Change title to Job Ticket Attributes
 - Add Job Receipt Attributes for -actual
 - Move media-col and finishings-col to a note with pointers to specs.
 - Documents:
 - Reword this, document-formats-supported
 - Submitting Print Jobs
 - Make Create-Job + Send-Document a note with a pointer to the IIG
- Add reference to Wireshark
- Action: Mike to investigate IPPS issue in Wireshark - “ipp” filter not working

14. IPP Authentication

- <https://ftp.pwg.org/pub/pwg/ipp/whitepaper/tb-ippauth-20180510-rev.pdf>
- Enable line numbers in draft
- Section 3.1:
 - Paragraph two: User’s identity (not client’s identity)
 - Job Status attributes

- "... or to support IPP operations ..."
- Section 3.1.1: Missing section reference at the end.
- Section 3.1.5: (Negotiate)
 - Figure still says HTTP Digest in it
 - Step 12 should loop back with username@DOMAIN
- Section 3.1.6:
 - Fix "instrospection" in figure on line 24
 - Drop second figure (using basic or digest with oauth)
- Section 3.1.7:
 - Mike will work with Smith to update this text
 - Figure still shows OAuth2
- Section 6.2:
 - Reference TLS/X.509 best practices - RFC 6125
- Section 6.3:
 - Bullet 3.3: Make it 3 years for User-provided certs
 - MUST NOT do SHA-1 or MD-5

Next Steps / Open Actions

- Next IPP WG conference calls on Thursday, June 7 and 21, 2018 from 3:00-4:30pm ET
- Action: Mike to post registration template obsoleting access-x509-certificate
- Action: Smith to post diagrams showing different encrypted job topologies
- Action: Mike to post updated "mothball" draft of IPP Encrypted Jobs and Documents tracking current state
- Action: Mike to check on Bonjour trademark status
- Action: Mike to investigate IPPS issue in Wireshark - "ipp" filter not working
- Action: Mike to post an initial draft of IPP 3D v1.1 (DONE)
- Action: Mike to update web site to allow confirmation of issues without assignment (PENDING)
- Action: Smith to follow-up on the 3MF liaison agreement (IN PROGRESS - Alexander Auster (Autodesk) will be taking over as the 3MF liaison, Kurt Hunter is shepherding things)
- Action: Mike/Ira to request IESG change of status for RFC 8010/8011 to Internet Standard (DONE)
- Action: Mike to document ippserver setup on Raspberry Pi for 3D (IN PROGRESS - close to wrapping it up)