



The Printer Working Group

IPP Workgroup Session

February 8, 2022



Before We Begin...

- **PWG Antitrust Policy:**
 - https://www.pwg.org/chair/membership_docs/pwg-antitrust-policy.pdf
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Agenda (1/2)



February 8, 2022 (US Eastern Daylight Time)

When	What
10:00 - 10:45	PWG Plenary
10:45 - 11:00	IPP WG: Status
11:00 - 12:00	IPP WG: Prototype-Ready Specifications
12:00 - 12:45	Lunch
12:45 - 14:00	IPP WG: IPP/2.0 and IPP Everywhere v2.0

Agenda (2/2)



February 9, 2022 (US Eastern Daylight Time)

When	What
10:00 - 12:00	IDS WG: Status and Discussion
12:00 - 12:45	Lunch
12:45 - 13:45	IPP WG: 3D Printing Liaisons/Discussions
13:45 - 14:00	IPP WG: Next Steps



- Current charter:
 - <https://ftp.pwg.org/pub/pwg/ipp/charter/ch-ipp-charter-20210409.pdf>
- The Internet Printing Protocol (IPP) workgroup is chartered with the maintenance of IPP and the IETF IPP registry, and support for new clients, network architectures (Cloud, SDN), MFD/Imaging service bindings, and emerging technologies such as 3D Printing
- In addition, we maintain the IETF Finisher MIB, Job MIB, and Printer MIB registries, the PWG MIBs, the PWG Semantic Model schema, and handle synchronization with changes in IPP



- **IPP WG Co-Chairs:**
 - Paul Tykodi (TCS)
 - Ira McDonald (High North)
- **IPP WG Secretary:**
 - Michael Sweet (Lakeside Robotics)
- **IPP WG Document Editors:**
 - Michael Sweet (Lakeside Robotics) – Internet Printing Protocol/2.x Fourth Edition, IPP Encrypted Jobs and Documents v1.0, IPP Everywhere v2.0, IPP Production Printing Extensions v2.0
 - Smith Kennedy (HP Inc.) – IPP Driverless Printing Extensions v2.0, IPP Encrypted Jobs and Documents v1.0, IPP Enterprise Printing Extensions v2.0, IPP Finishings v3.0



- PWG Specifications in development:
 - Internet Printing Protocol/2.x Fourth Edition - Interim
 - IPP Driverless Printing Extensions v2.0 - Prototype
 - IPP Encrypted Jobs and Documents v1.0 - Prototype
 - IPP Enterprise Printing Extensions v2.0 - Prototype
 - IPP Everywhere™ v2.0 - Interim
 - IPP Finishings v3.0 - Stable
 - IPP Production Printing Extensions v2.0 - Prototype
- Recently published:
 - Deprecating IPP Print by Reference v1.0
 - PWG 5199.11-2021: Job Accounting with IPP v1.0

Status (2/3)



- Up-to-date pending IANA registrations online:
 - <https://www.pwg.org/ipp/ipp-registrations.xml>
 - Continue to maintain this in parallel for new specifications
 - Github repository: <https://github.com/istopwg/ippregistry>
- IPP Everywhere Printer Self-Certifications:
 - <https://www.pwg.org/printers>
 - ~~752~~ **768** printers currently listed from HP and Lexmark
 - 1.1 self-certification tools update 3 approved June 2021
 - *Update 4 in progress*
- IPP Sample Code:
 - Github repository:
 - <https://github.com/istopwg/ippsample>
 - Fork of CUPS code includes ipp3dprinter, ippeveprinter, ippfind, ippproxy, ippserver, ipptool, ipptransform, and ipptransform3d

Status (3/3)



- **Pending Errata:**

- PWG 5100.5-2019 (Document Object v1.1): 4 issues
- PWG 5100.6-2003 (Page Overrides v1.0): 2 issues
- PWG 5100.7-2019 (Job Extensions v2.0): 5 issues
- PWG 5100.8-2003 ("-actuals" v1.0): 1 issue
- PWG 5100.9-2009 (Printer State Extensions v1.0): 2 issues
- PWG 5100.15-2014 (FaxOut v1.0): 2 issues
- PWG 5100.18-2015 (Infrastructure Extensions v1.0): 6 issues
- PWG 5100.19-2015 (Implementor's Guide v2.0): 6 issues
- PWG 5100.22-2019 (System Service v1.0): 2 issues
- PWG 5107.3-2019 (MFD Alerts v1.1): 1 issue

- **In-Progress Errata:**

- PWG 5100.1-2017 (Finishings v2.1): 3 issues
- PWG 5100.3-2001 (Production Printing): 2 issues
- PWG 5100.11-2010 (JPS2 - Enterprise Printing): 7 issues
- PWG 5100.12-2015 (IPP 2.0, 2.1, and 2.2): 2 issues
- PWG 5100.13-2012 (JPS3 - Driverless Printing): 15 issues



Prototype-Ready Specifications

- IPP Driverless Printing Extensions v2.0 (NODRIVER)
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippnodriver20-20220207.pdf>
- IPP Encrypted Jobs and Documents v1.0 (TRUSTNOONE)
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ipptrustnoone10-20210428.pdf>
- IPP Enterprise Printing Extensions v2.0 (EPX)
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippepx20-20211101.pdf>
- IPP Production Printing Extensions v2.0 (PPX)
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippppx20-20211020.pdf>

Stable Specifications



- IPP Finishings v3.0 (FIN)
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippfinishings30-20220207.pdf>
 - Prototyped in ippsample project



The Printer Working Group

Lunch Break

Resuming at 12:45pm ET



IPP/2.x Fourth Edition

- Current interim draft:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippbase23-20220124-rev.pdf>
- Errata update of PWG 5100.12-2015:
 - Updated document references, including an informative reference to IPP Everywhere
 - Simplified reference tables and conformance requirements
 - New history of the development of the Internet Printing Protocol content to explain how we ended up with different protocol versions with the same encoding
- Proposed schedule:
 - Prototype draft after EPX 2.0, FIN 3.0, and PPX 2.0



Get-Printer-Attributes

- The Get-Printer-Attributes operation is unique in that it does not support authentication of any kind. The primary reason for this is that it is needed for discovering the supported URIs, security, and authentication methods for the Printer via the "printer-uri-supported", "printer-xri-supported", "uri-authentication-supported", and "uri-security-supported" attributes. A secondary reason is that the corresponding SNMP Printer MIB elements are likewise available without authentication.
- In STD 92, we forgot to explicitly document this
 - Relies on the historical omission of any "access rights" paragraph in the definition of the Get-Printer-Attributes operation.
- We propose to add a section on Get-Printer-Attributes to IPP/2.x to explicitly document this



Printer Classes/Categories

- **Enterprise Printer:** A high availability Output Device that is shared by large groups of people to produce medium to high volumes of hardcopy output.
- **Production Printer:** A high volume and/or Large Format Output Device that is used to deliver finished hardcopy output such as books, magazines, business cards, posters, and so forth.
 - **Large-Format Printer:** An Output Device that is used to deliver finished hardcopy output such as large banners, posters, signs, and so forth.
- **Workgroup Printer:** An Output Device that is used by a single End User or small groups of people to produce low volumes of hardcopy output.
 - **Card Printer:** An Output Device that is used to produce identification and/or banking cards.
 - **Label/Receipt Printer:** An Output Device that is used to produce labels and/or variable-length receipts from fanfold or roll media.



IPP Everywhere v2.0

- Current interim draft:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeve20-20220124-rev.pdf>
- New/updated requirements:
 - TLS support
 - IPP Privacy Attributes v1.0
 - PWG 5100.1-202X: IPP Finishings v3.0 (FIN)
 - PWG 5100.7-2019: IPP Job Extensions v2.0 (JOBEXT)
 - PWG 5100.13-20XX: IPP Driverless Printing Extensions v2.0 (NODRIVER)
 - PWG 5199.10-2019: IPP Authentication Methods v1.0
 - PWG 5199.11-2020: Job Accounting with IPP v1.0
- Conditional requirements:
 - PWG 5100.3-202X: IPP Production Printing Extensions v2.0 (PPX)
 - PWG 5100.11-202X: IPP Enterprise Printing Extensions v2.0 (EPX)
 - PWG 5100.22-2019: IPP System Service v1.0 (SYSTEM)



Support for Special-Purpose Printers

- Not all printers support US Letter/ISO A4 media
 - Photo printers targeting 4x6/A6
 - Thermal label/receipt printers with 2-4" wide rolls
- Currently the document format tests require support for US Letter and ISO A4 media
- What to do?
 - Do nothing (not ideal/preferred)
 - Skip tests for sizes that are not supported (easiest but doesn't address print/file format issues)
 - Add additional test document sizes (would make tests more complicated)
 - Generate test documents dynamically (hardest but certainly possible, already have some code to use as a starting point, would also help for duplex/finishing tests)



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Lunch Break

Resuming at 12:45pm ET

3D Printing Organizations/Liaisons (1/2)



- 3MF Consortium: <https://www.3mf.io>
 - Renew expired liaison agreement
 - Is there still interest in an IPP Job Ticket example?
- AMSC: <https://www.americamakes.us/>
 - AMNOW: <https://www.americamakes.us/ncdmm-and-catalyst-connection-announce-next-phase-of-amnow-program-to-support-additive-manufacturing-technology-insertion-into-the-u-s-army-supply-chain/>
- ASTM Committee F42:
 - <https://www.astm.org/COMMITTEE/F42.htm>
- INCITS:
 - <https://www.incits.org>
 - Potential 3D Printing Protection Profile (with IDS workgroup)
 - Looking at AMSC-identified gaps, particularly 3D scanning
 - Review framework for an Additive Manufacturing Service Platform (AMSP) information

3D Printing Organizations/Liaisons (2/2)



- ISO/IEC JTC 1 WG 12:
 - <https://www.iso.org/committee/45020.html>
- OPC40540 UA for AM Joint Working Group
 - Kick-off event is February 15, 2022
 - <https://www.vdma.org/events-trade-fairs/-/event/view/70649>
- PDF Association + ISO/IEC TC171:
 - <https://www.iso.org/committee/53674.html>
- SME iRAMP:
 - <https://www.sme.org/iramp/>



3D Printing Conferences/Opportunities

- America Makes TRX
 - March 22-24, 2022
 - No virtual option - in-person only
- RAPID + TCT
 - May 17-19, 2022
- ASTM ICAM 2022
 - October 31 - November 4, 2022
 - Orlando, FL
 - <https://amcoe.org/icam2022>
 - Deadline is March 1st for PWG cyber security presentation
- Formnext:
 - <https://formnext.mesago.com/frankfurt/en.html>
 - https://formnext.mesago.com/frankfurt/en/themes-events/digital_days.html
 - November 15-18, 2022 in Frankfurt, Germany
 - Formnext USA at McCormick Place in Chicago, IL March 14-16, 2025



3D Printing and Scanning Discussions

- Current documents:
 - PWG 5100.21-2019: IPP 3D Printing Extensions v1.1
 - PWG 5199.5-2017: PWG 3D Print Job Ticket and Associated Capabilities v1.0 (PJT3D)
- Proposed future work (2022-2023):
 - IPP 3D Scan Service v1.0 specification to address 3D scanning
 - IPP 3D Production Printing Extensions v1.0 specification to address AMSC AMNOW efforts
 - Updated PWG 3D Print Job Ticket and Associated Capabilities v2.0 (PJT3D) best practice to incorporate production extensions and IPP 3D v1.1



The Printer Working Group

Next Steps



Next Steps

- IPP/2.x Fourth Edition (Mike)
 - Prototype draft in Q2 2022
- IPP Driverless Printing Extensions v2.0 (Smith)
 - Stable draft in Q2 2022
- IPP Encrypted Jobs and Documents v1.0 (Mike/Smith)
 - Stable draft in Q4 2022
- IPP Enterprise Printing Extensions v2.0 (Smith)
 - Stable draft in Q3 2022
- IPP Everywhere v2.0 (Mike)
 - Prototype draft in Q3 2022
- IPP Finishings v3.0 (Smith)
 - IPP WG Last Call in Q1 2022
- IPP Production Printing Extensions v2.0 (Mike)
 - Stable draft in Q2 2022



More Information

- We welcome participation from all interested parties
- IPP Working Group web page
 - <https://www.pwg.org/ipp/index.html>
- Subscribe to the IPP mailing list
 - <https://www.pwg.org/mailman/listinfo/ipp>
- IPP WG holds bi-weekly phone conferences announced on the IPP mailing list
 - Next conference calls scheduled for Thursday, February 24 and March 10, 2022 at 3pm ET