



The Printer Working Group

IPP Workgroup Session

May 18, 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)



May 18, 2022 (US Eastern Daylight Time)

When	What
10:00 - 11:00	CUPS Plenary
11:00 - 12:00	Printer Applications, Retrofitting
12:00 - 12:45	Lunch
12:45 - 13:45	cups-filters, CUPS Snap, Driverless Scanning
13:45 - 14:15	IPP WG: Status
14:15 - 14:45	Break
14:45 - 15:00	IPP WG: 3D Printing
15:00 - 15:30	IPP WG: Understanding 3D PDF
15:30 - 16:00	IPP WG: Rendering 3D Content Into 2D Contexts

Agenda (2/2)



May 19, 2022 (US Eastern Daylight Time)

When	What
10:00 - 11:45	IPP WG: IPP/2.0 and IPP Everywhere 2.0
11:45 - 12:00	IPP WG: Next Steps
12:00 - 12:45	Lunch
12:45 - 14:45	IDS WG: Status and Discussion



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OpenPrinting

CUPS Plenary

Printer Applications

Retrofitting Printer Applications



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Lunch Break

Resuming at 12:45pm ET



The Printer Working Group

OpenPrinting

cups-filters

CUPS Snap

Driverless Scanning



- 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 - Formal Vote
 - 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>
 - 768 **854** printers currently listed from DCC, HP, Lexmark, and OKI
 - 1.1 self-certification tools update 3 approved June 2021
 - *Update 4 in beta testing*
- IPP Sample Code:
 - Github repository:
 - <https://github.com/istopwg/ippsample>
 - Fork of CUPS code includes ipp3dprinter, ippeveprinter, ippfind, ippproxy, ippserver, ipptool, ipptransform, and ipptransform3d



- **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-ippfinishings30-20220408.pdf>
 - Prototyped in ippsample project
 - **PWG Formal Vote ends May 27, 2022**

"ACME-Based Provisioning of IoT Devices"



- Interim (early) draft in IETF IoT Operations WG:
 - <https://datatracker.ietf.org/doc/draft-sweet-iot-acme/>
- Abstract:
 - This document extends the Automatic Certificate Management Environment (ACME) [RFC8555] to provision X.509 certificates for local Internet of Things (IoT) devices that are accepted by existing web browsers and other software running on End User client devices.
- Goal is to eliminate scary browser security warnings when accessing embedded web servers
- Adds a trusted ACME service to local networks that can be discovered via DHCP and/or DNS-SD (traditional DNS, not mDNS)
 - Local x.509 root certificate ("trust anchor") can be self-signed or CA-signed for an organization
 - Self-signed roots need to be added to browser/OS trusted certificates while connected to that network



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Break

Resuming at 2:45pm ET



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



3D Meetings (1/2)

- RAPID + TCT – May 17 - 19, 2022 Detroit MI
 - Digital Registration (virtual attendance)
- ASME AM Industry Summit – June 20–22, 2022:
 - Additive Manufacturing Standards Forum - In collaboration with America Makes
 - Monday, June 20, 2022 1:00 PM to 4:30 PM – Requested further information about attending
- ASTM International Conference on Additive Manufacturing (ASTM ICAM 2022):
 - October 31 – November 4, 2022 sponsored by the ASTM International Additive Manufacturing Center of Excellence (AM CoE), will be held in Orlando, FL at the JW Marriott Orlando Bonnet Creek Resort and Spa. If PWG Cyber Security presentation is accepted, at least one PWG member must attend and be onsite to facilitate the presentation. If presentation is not accepted, attend virtually.



3D Meetings (2/2)

- Standards Forum at formnext – Nov 14, 2022 – Frankfurt Germany:
 - If attending formnext in person, due to participation in the activities of the VDMA – OPC UA Joint Working Group, attend the Standards Forum as well. Sponsored by US Commercial Service, ASTM, and ISO.
- formnext – Nov 15 – 18, 2022 – Frankfurt Germany:
 - Possibility to attend in person in the event the VDMA – OPC UA Joint Working Group makes a presentation at formnext. If they don't, attend virtually
- Transportation Research Board - 2nd International Conference on 3D Printing and Transportation: Late November 2022 – Keck Center – Washington, DC:
 - Attend in person – on site
 - Possibility to make a presentation on safe G-code

Understanding 3D PDF



Rendering 3D Content into 2D Graphics Contexts





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IPP/2.x Fourth Edition

- Current interim draft:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippbase23-2022mmdd-rev.pdf>
- Errata update of PWG 5100.12-2015:
 - Clarification about Get-Printer-Attributes operation
 - Definition of classes or categories of printers
 - 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



IPP Everywhere v1.1

- Some concerns about timing of submission process and usage of the logo images prior to product release:
 - <https://github.com/istopwg/ippeveselfcert/issues/76>
- Section 12 (Logo Usage Guidelines) of PWG 5100.20-2020 says the following:

"You can use the IPP Everywhere™ logo [LOGO] in marketing material, product packaging, and documentation for products that have passed the IPP Everywhere™ Printer Self-Certification tests and whose results have been submitted to the IEEE-ISTO Printer Working Group. Please contact the IEEE-ISTO Printer Working Group steering committee to obtain written approval for any other usage of the logo."

IPP Everywhere v1.1



- A literal interpretation of these guidelines might lead a member to believe they could not use the logo in the preparation of product and marketing materials *prior* to the submission of the self-certification results to the PWG
- As a result, we'd like the PWG Steering Committee to proactively grant the right for any PWG member to use the logo in the preparation of product and marketing materials for IPP Everywhere™ printers, subject to passing the self-certification tests and eventual submission of the results from those tests within a reasonable period of time after release (say, 30 days)
 - Also include this in the IPP Everywhere v2.0 Printer Self-Certification Manual update



IPP Everywhere v2.0

- Current interim draft:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeve20-2022mmdd-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)

IPP Everywhere Printer Self-Certification Manual v2.0



- Initial draft:
 - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeveselfcert20-2022mmdd.pdf>
- Synchronize with changes in IPP Everywhere v2.0
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Next Steps



Next Steps

- IPP/2.x Fourth Edition (Mike)
 - Prototype draft in Q3 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)
 - **PWG Formal Vote ends May 27, 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, June 2 and June 16, 2022 at 3pm ET



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Lunch Break

Resuming at 12:45pm ET