



# The Printer Working Group

IPP Workgroup Session

November 16, 2023



# Before We Begin...

- PWG Antitrust Policy:
  - [https://www.pwg.org/chair/membership\\_docs/pwg-antitrust-policy.pdf](https://www.pwg.org/chair/membership_docs/pwg-antitrust-policy.pdf)
  - The IEEE-ISTO Printer Working Group ("PWG") will not become involved in the business decisions of its Members. The PWG strictly complies with applicable antitrust laws. Every PWG meeting attendee shall comply with this policy. The PWG Officers and PWG Workgroup Officers are responsible to ensure that this policy is adhered to in all PWG activities.
- PWG Intellectual Property Policy:
  - [https://www.pwg.org/chair/membership\\_docs/pwg-ip-policy.pdf](https://www.pwg.org/chair/membership_docs/pwg-ip-policy.pdf)
  - TL;DR: Anything you say in a PWG meeting or email to a PWG address can be used in a PWG Document
  - (but please do read the IP policy above if you haven't done so)
- **This meeting is being recorded to assist in preparation of minutes but will not be published**



## November 16, 2023 (US Eastern Standard Time)

When	What
10:00 - 10:15	IPP WG: Status
10:15 - 11:00	IPP WG: Enterprise Printing Extensions v2.0
11:00 - 12:00	IPP WG: IPP OAuth Extensions v1.0
12:00 - 12:45	Lunch Break
12:45 - 14:15	IPP WG: 3D Printing Discussions
14:15 - 14:30	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
- **Due for an update**



- **Pending:**

- PWG 5100.5-2019 (Document Object v1.1): 4 issues
- PWG 5100.6-2003 (Page Overrides v1.0): 2 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): 8 issues
- PWG 5100.19-2015 (Implementor's Guide v2.0): 8 issues
- PWG 5100.22-2019 (System Service v1.0): 3 issues
- PWG 5107.3-2019 (MFD Alerts v1.1): 1 issue

- **In-Progress:**

- PWG 5100.11-2010 (JPS2 - Enterprise Printing): 7 issues
- PWG 5100.12-2015 (IPP 2.0, 2.1, and 2.2): 2 issues
- PWG 5100.14-2020 (IPP Everywhere v1.1): 4 issues
- PWG 5100.20-2020 (IPP Everywhere v1.1 Self-Cert): 1 issue

# IPP Enterprise Printing Extensions v2.0



- Stable Draft:
  - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippepx20-20231017.pdf>
- Prototyping Status:
  - Smith and Mike have completed prototyping with PAPPL
  - <https://github.com/wifiprintguy/pappl-epx/tree/epx-proto-libcups3-2>
- Proposed Schedule:
  - PWG Last Call Q1 2024



# EPX Prototyping (1/2)

- Code on dev branch of "pappl-epx" (fork of pappl)
  - <https://github.com/wifiprintguy/pappl-epx/tree/epx-proto-libcups3-2>
- Extra "testepx" folder has "new" code
  - ep<sub>x</sub>-dev-plan.md
  - ep<sub>x</sub>-driver.c
  - pwg5100.11.test
  - testep<sub>x</sub>.c
  - testep<sub>x</sub>.h
- Modifications to PAPP<sub>L</sub> code as well
- Coding is likely "ugly" and will need massaging if we want to merge into upstream PAPP<sub>L</sub> project



# EPX Prototyping (2/2)

- ipptool test file:
  - <https://github.com/wifiprintguy/pappl-epx/blob/epx-protolibcups3-2/teststepx/pwg5100.11.test>
  - Required attributes
    - "printer-service-contact-col", "ipp-features-supported"
  - Job Release
    - Feature detection, created button press Release Job, wait for release via PAPPL web interface
  - Job Print Policy
    - Feature detection, comparison of Get-Printer-Attributes and Get-User-Printer-Attributes results
  - Job Storage
    - Feature detection, creation of Stored Job, reprint of Stored Job using Resubmit-Job
  - Job Proof and Suspend
    - Feature detection, creation of Proof and Suspend Job, use Resume-Job to "approve" the Proof and Suspend Job to let it complete printing all its copies





# IPP OAuth Extensions v1.0 (OAUTH)

- **Prototype Draft:**
  - <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippoauth10-20230814-rev.pdf>
- **Goals:**
  - Define/reference best practices for using OAuth/OpenID with IPP
  - Prototype/deploy OAuth/OpenID support for printing
- **Prototyping Status:**
  - OAuth (JWT) and X.509 support code is available in libcups v3 and CUPS 2.5
  - <https://github.com/OpenPrinting/cups/tree/master>
  - <https://github.com/OpenPrinting/libcups/tree/master>
  - <https://github.com/OpenPrinting/cups-local/tree/master>
  - <https://github.com/OpenPrinting/cups-sharing/tree/master>
- **Proposed Schedule:**
  - Stable draft Q1 2024



# The Printer Working Group

Lunch Break

November 16, 2023

*IPP workgroup resuming at 12:45pm 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)
  - PWG 5199.7-2019: PWG Safe G-Code Subset for 3D Printing v1.0
- Proposed future work (2023-2024):
  - IPP 3D Scan Service v1.0 specification to address 3D scanning
  - IPP 3D Production Printing Extensions v1.0 specification to address VDMA - OPC UA "Joint Working Group (JWG) for Additive Manufacturing" efforts
  - Updated PWG 3D Print Job Ticket and Associated Capabilities v2.0 (PJT3D) best practice to incorporate production extensions and IPP 3D v1.1
  - Create sample 3MF print files with embedded job tickets, do more IPP 3D prototyping



# 3D Printing Liaisons

- 3MF Consortium
  - <https://3mf.io/>
  - Mike Sweet is the PWG liaison
  - Want to create some sample 3MF print files with embedded job tickets and do more IPP 3D prototyping
  - Collaborate with 3MF and AMSC to use IPP 3D to satisfy need to query device capabilities and securely submit content for printing
- VDMA OPC UA for Additive Manufacturing - Joint Working Group 40 540
  - <https://www.vdma.org/events-trade-fairs/-/event/view/70649>
  - Paul Tykodi is representing the PWG in the activities of the Joint Working Group. The JWG has a potential interest in referencing IPP 3D standard for secure remote job submission



# 3D Meetings (1/2)

- Drupa - May/June 2024
  - [https://www.drupa.com/en/Media\\_News/Press/Press\\_Material/Press\\_releases/drupa\\_next\\_age\\_Platform\\_for\\_networking\\_and\\_new\\_business](https://www.drupa.com/en/Media_News/Press/Press_Material/Press_releases/drupa_next_age_Platform_for_networking_and_new_business)
  - We have been invited to prepare a presentation looking at how standardization may shape future directions in Additive Manufacturing for the Drupa Next Age stage
  - The Drupa representative is interested in hearing whether Microsoft might be willing to participate in a PWG sponsored panel discussion focusing on the potential benefits Microsoft sees in possibly converting its 3D Printer support in Windows OS to an IPP class driver concept.
  - In the last SC meeting, Smith Kennedy suggested he felt this type of presentation would need to be supported by some PWG use cases that would need to be developed.
    - Q: Is this something PWG membership wants to do?

# 3D Meetings (2/2)



- TCT 3Sixty Conference - June 2024
  - <https://tct3sixty.com/>
  - We have been invited to submit an abstract on any of the following Additive Manufacturing topics:
    - Construction & Architecture - Safe G-Code for sharing test files
    - Standards & Repeatability - Use aspects of IPP suite of standards to develop cloud to device secure remote job submission option for production class additive manufacturing devices
    - IP & Security - Common Criteria for Additive Manufacturing
  - Q: Is this something we want to do?
    - If so, it is due by December 8th, 2023



# Other 3D Developments

- American Concrete Institute committee 564 wants me to update the slides from 2019 and focus immediately in the updated presentation on the challenge (sharing test files across multiple 3D Concrete Printing equipment) and the potential of PWG Safe G-Code to offer a solution
  - Q: Develop use cases and update slides?
- NIST wants to develop Common Criteria use cases for their Additive Manufacturing security projects to support requirements called out in NIST publications (i.e. using Common Criteria based testing methodology to confirm you are conforming to a NIST requirement).
  - Q: Is this something PWG membership wants to do?
- Q: Develop use cases for ICAM security-focused individuals showing the benefit and ease of deployment when using IPP to secure cloud to Additive Manufacturing production device information transfer. I believe we should then plan to share the use cases with ICAM security focused individuals?



# The Printer Working Group

## Next Steps





# Next Steps

- IPP/2.x Fourth Edition (Mike)
  - Prototype draft in Q4 2023/Q1 2024
- IPP Encrypted Jobs and Documents v1.0 (Mike/Smith)
  - Stable draft in Q1 2024
- IPP Enterprise Printing Extensions v2.0 (Smith)
  - PWG Last Call in Q1 2024
- IPP Everywhere v2.0 (Mike)
  - Stable draft in Q4 2023/Q1 2024
- IPP Everywhere Printer Self-Certification Manual v2.0 (Mike)
  - Prototype draft in Q1 2024
- IPP OAuth Extensions v1.0 (Mike/Piotr)
  - Stable draft in Q1 2024



# 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, December 7, 2023 and January 4, 2024 at 3pm ET