



The Printer Working Group

PWG 2021 State of the Union

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PWG 2021 State of the Union

- Mopria and the PWG
- Imaging Device Security (IDS) Workgroup
 - Status and Activities
- PWG Internet Printing Protocol (IPP) Workgroup
 - Core IPP Specifications
 - Recently Approved or Updated PWG Specifications
 - PWG IPP Work In Progress
- Q & A



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Mopria and the PWG



Mopria Alliance and the PWG

- Formal Liaison between Mopria and PWG in place
 - Michael Rhines (Qualcomm) is Mopria Alliance's liaison to the PWG
 - Renewed every 2 years
- Even though we have different IPR and confidentiality policies, the PWG wants active communications between the PWG and its partners
 - But there have been difficulties with Mopria or its members communicating with the PWG. We are open to suggestions on how to improve communications between PWG and Mopria
- Majority of Mopria Print technical specification built using PWG and IETF standards
 - Mopria can extend these using their own definitions or create their own normative requirements
- Mopria Alliance or its members should not hesitate to reach out to the PWG with questions or issues relating to PWG specifications or other documents, or the IANA IPP Registry
 - Submit feedback to the PWG via Mopria Liaison to PWG or directly



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The Printer Working Group

Imaging Device Security (IDS)
Workgroup



PWG Imaging Device Security

- Secure the Client and Printer to establish and maintain customer faith in the printing ecosystem
 - Protecting communications
 - Protecting information stored at rest
- Define standards and guidelines to make the imaging device (printer) and the act of printing more trusted
 - Protects User Data (document content), Printer data (job ticket) and TSF Data (login credentials, encryption keys)
 - Defines requirements for data access and transport security
- PWG Hardcopy Device Security Guidelines v1.0 (HCDSEC):
 - <https://ftp.pwg.org/pub/pwg/ids/wd/wd-idshcdsec10-20201101.pdf>



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Internet Printing Protocol (IPP)
Workgroup



Core IPP Specifications

Lines in **RED** have updates pending; lines in **BLUE** were ratified in the last 2 years

- IETF STD 92: IPP/1.1 (RFC 8010 and RFC 8011)
- **PWG 5100.1-2017: IPP Finishings 2.1 (FIN)**
- **PWG 5100.3-2001: Production Printing Attributes – Set 1**
- **PWG 5100.7-2019: IPP Job Extensions v2.0 (JOBEXT)**
- **PWG 5100.11-2010: IPP: Job and Printer Extensions - Set 2 (JPS2)**
- **PWG 5100.13-2012: IPP: Job and Printer Extensions – Set 3 (JPS3)**
- **PWG 5100.14-2020: IPP Everywhere™ v1.1**
 - **PWG 5100.20-2020: IPP Everywhere™ Printer Self-Certification Manual v1.1 (SELCERT)**
- PWG 5100.15-2014: IPP FaxOut Service
- **PWG 5100.16-2020: IPP Transaction-Based Printing Extensions v1.1**
- PWG 5100.17-2014: IPP Scan Service
- PWG 5100.18-2015: IPP Shared Infrastructure Extensions (INFRA)
- PWG 5100.19-2015: IPP Implementor's Guide v2.0 (IG)
- **PWG 5100.22-2019: IPP System Service v1.0 (SYSTEM)**
- PWG 5101.1-2013: PWG Media Standardized Names 2.0
- PWG 5102.4-2012: PWG Raster Format



IPP Everywhere™ Certified Printers

- <https://www.pwg.org/ipp/everywhere.html>
- **752** printers now certified!
 - <https://www.pwg.org/printers/>
 - More on the way!
- IPP Everywhere™ Self Certification 1.1 Update 3
 - Released May 17, 2021; approved June 16, 2021
 - **Mandatory for certification starting July 1, 2021**
 - **IPP Everywhere v1.0 Certifications no longer accepted**
- IPP Everywhere™ Self Certification 1.1 Update 4
 - In development; no beta available yet
- IPP Everywhere v2.0 scoping and requirements in development



Recently Approved

- 2019
 - PWG 5100.22-2019: IPP System Service v1.0 (SYSTEM)
 - PWG 5199.10-2019: IPP Authentication Methods v1.0
 - PWG 5100.7-2019: IPP Job Extensions v2.0 (JOBEXT)
- 2020
 - PWG 5100.14-2020: IPP Everywhere™ v1.1
 - PWG 5100.20-2020: IPP Everywhere™ Printer Self-Certification Manual v1.1 (SELFCERT)
 - PWG 5100.16-2020: IPP Transaction-Based Printing Extensions v1.1
- 2021
 - PWG 5199.11-2021: Job Accounting with IPP v1.0



Work in Progress 2021-2022

- Deprecating IPP Print by Reference v1.0 Registration
 - Stable draft in Q4 2021
- IPP Finishings 3.0
 - Stable draft in Q4 2021
- IPP Encrypted Jobs and Documents v1.0
 - Stable draft in Q1 2022
- IPP Production Printing Extensions v2.0
 - Stable draft in Q4 2021
- IPP Enterprise Printing Extensions v2.
 - Stable draft in Q4 2021
- IPP Driverless Printing Extensions v2.0
 - Prototype draft in Q4 2021
- Internet Printing Protocol/2.x Fourth Edition
 - Stable draft in Q1 2022



Next PWG Face-to-Face Meeting

November 2-4, 2021 : Virtual

Please attend!

Visit the [PWG meeting page](#) for more info.



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Thank You!



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Recently Approved : Details



Updated - 2019

- PWG 5100.7-2019: IPP Job Extensions v2.0 (JOBEXT)
- Changes
 - Deprecated
 - "document-format-details"
 - Obsolete
 - "document-digital-signature", "job-copies", "job-cover-back", "job-cover-front", "job-finishings", "job-finishings-col", "document-format", "document-format-version", "document-natural-language", and "document-format-device-id" members of "document-format-details"
 - New Attributes
 - "job-mandatory-attributes-supported", "job-retain-until", "job-retain-until-interval", and "job-retain-until-time", "job-history-attributes-configured", "job-history-attributes-supported", "job-history-interval-configured", and "job-history-interval-supported"
- Received from "IPP Job and Printer Extensions - Set 2" [PWG5100.11-2010]
 - "job-ids", "job-delay-output-until" / "job-delay-output-until-time", "job-hold-until-time", "job-creation-attributes-supported", "job-spooling-supported", "media-col-database", "printer-detailed-status-messages", and "which-jobs-supported"
- Received from "IPP Production Printing Attributes - Set 1" [PWG5100.3-2001]
 - "job-account-id", "job-accounting-user-id", "job-sheets-col", "media-col"
- Moved to "IPP Document Object v1.1" [PWG 5100.5]:
 - "document-charset"
- <http://ftp.pwg.org/pub/pwg/candidates/cs-ippjobext20-20190816-5100.7.pdf>



- **PWG 5100.22-2019: IPP System Service v1.0 (SYSTEM)**
 - 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).
 - Defines IPP objects, operations, and attributes to support management and status monitoring of all configured Services, Subunits, and Resources on an Imaging System
 - Defines IPP operations and attributes to support registration of an IPP System, through its IPP Proxy, with one or more Cloud Imaging Systems
 - Technically aligned with the abstract Cloud Imaging Requirements and Model [PWG5109.1] and concrete IPP Shared Infrastructure Extensions [PWG5100.18]
 - <https://ftp.pwg.org/pub/pwg/candidates/cs-ippsystem10-20191122-5100.22.pdf>
- **PWG 5199.10-2019: IPP Authentication Methods v1.0**
 - PWG Best Practice document
 - Provides implementation guidance on how to best integrate various authentication mechanisms used over IPP's HTTP and HTTPS transports into IPP protocol exchanges when printer access or print feature policy requires authorization
 - <https://ftp.pwg.org/pub/pwg/informational/bp-ippauth10-20190816-5199.10.pdf>



- **PWG 5100.14-2020: IPP Everywhere™ v1.1**
 - Defines an IPP profile that supports network printing without vendor-specific driver software, including the transport, various discovery protocols, and standard document formats.
 - Softened requirements since v1.0
 - "printer-alert" and "printer-alert-description" Printer Status attributes now RECOMMENDED for Printers representing Physical Devices and OPTIONAL for Printers representing Logical Devices;
 - The "printer-device-id" Printer Description attribute and associated DNS-SD TXT record keys are no longer required;
 - DNS-SD is now RECOMMENDED for Printers representing Logical Devices (print servers);
 - ICC attributes are now CONDITIONALLY REQUIRED for printers that support ICC-based color management;
 - JPEG JFIF document format support is still REQUIRED for color printers but now RECOMMENDED for monochrome printers;
 - "compression-supplied", "document-format-supplied", "document-format-version", "document-format-version-supplied", "document-name-supplied" attributes are no longer required;
 - "feed-orientation", "feed-orientation-default", and "feed-orientation-supported" attributes are no longer required;
 - "print-content-optimize", "print-content-optimize-default", and "print-content-optimize-supported" attributes have been reduced to RECOMMENDED; and
 - "printer-supply", "printer-supply-description", and "printer-supply-info-uri" Printer Status attributes are now CONDITIONALLY REQUIRED for Printers that have supplies.
 - New recommendations
 - IPP Finishings 2.1 and the "finishings-col" Job Template attribute are now RECOMMENDED;
 - The "printer-input-tray" and "printer-output-tray" Printer Description attributes are now RECOMMENDED to provide tray information and status; and
 - The "printer-strings-languages-supported" and "printer-strings-uri" Printer Status attributes are now RECOMMENDED to support localization.



- PWG 5100.20-2020: IPP Everywhere™ Printer Self-Certification Manual v1.1 (SELCERT)
 - Defines IPP Everywhere™ v1.1 Printer self-certification test procedures and the process required for PWG Members to register the test results on the PWG web site in order to use the "IPP Everywhere™" logo
 - JPEG is now conditionally required for color printers
 - Media needed tests are no longer required for Logical Printers (servers)
 - Tests for the Identify-Printers and Cancel-Jobs operations were added
 - Logo usage guidelines were added
- <https://www.pwg.org/printers/index.html>



- PWG 5100.16-2020: IPP Transaction-Based Printing Extensions v1.1
 - Defines extensions to the Internet Printing Protocol that support the business transaction logic needed for paid and quota-based printing through local and commercial services.
 - New
 - "printer-requested-job-attributes"
 - Received from [PWG5100.13-2012]
 - "printer-charge-info" and "printer-charge-info-uri"
 - Received from [PWG5100.11-2010]
 - "printer-mandatory-job-attributes"
 - Moved to IPP Driverless Printing Extensions v2.0 (NODRIVER)
 - "profile-uri-actual"
 - "print-scaling" / "print-scaling-default" / "print-scaling-supported"
 - "jpeg-k-octets-supported", "jpeg-x-dimension-supported", "jpeg-y-dimension-supported", "pdf-k-octets-supported", "pdf-versions-supported"
 - "printer-dns-sd-name"
 - "printer-kind"
 - Moved to IPP Enterprise Printing Extensions v2.0 (EPX)
 - "job-state-reasons" keywords: 'conflicting-attributes', 'job-release-wait', and 'unsupported-attributes-or-values'
 - The required state for Jobs submitted to release printing services was relaxed.
 - <https://ftp.pwg.org/pub/pwg/candidates/cs-ipprans11-20200327-5100.16.pdf>



- PWG 5199.11-2021: Job Accounting with IPP v1.0
 - IPP Best Practices document
 - Discusses how to perform different kinds of job accounting with IPP and how to address privacy and consent issues associated with accounting information
 - <https://ftp.pwg.org/pub/pwg/informational/bp-ippaccounting10-20210205-5199.11.pdf>



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Work in Progress 2021-2022 : Details

Deprecating IPP Print by Reference v1.0 Registration



- Proposes to formally deprecate the IPP print-by-reference operations (Print-URI, Send-URI) and related attributes, values, and status codes
 - All use cases should be possible using other safer alternatives already defined in other IPP specifications including IPP Shared Infrastructure Extensions (PWG 5100.18-2015)
- <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippdepuri10-20210909.pdf>



IPP Finishings 3.0

- Updating PWG 5100.1-2017
- Status: Awaiting Prototype
- Changes
 - Finishings v2.1 Errata resolutions
 - Requirements made more strict
 - "finishings-col" / "finishings-col-database" / "finishings-col-ready" Printer support now REQUIRED
- Received from IPP Job and Printer Extensions – Set 3 [PWG 5100.13-2012]
 - "finishings" enum values: 'trim-after-pages', 'trim-after-documents', 'trim-after-copies' and 'trim-after-job'
- Latest draft: <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippfinishings30-20210902.pdf>

IPP Encrypted Jobs and Documents v1.0 (TRUSTNOONE)



- Defines new encrypted IPP message formats and operations that provide IPP with end-to-end encryption of IPP Job attributes, Document attributes, and Document data
 - Currently proposal uses S/MIME 4.0
 - Can also use PGP
- Status: Awaiting Prototype
- Latest draft: <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ipptrustnoone10-20210428.pdf>

IPP Production Printing Extensions v2.0 (PPX)



- Updating PWG 5100.3-2001
- Status: Awaiting Prototype
- Changes
 - Added
 - "image-orientation"
 - "date-time-at-completed-estimated", "date-time-at-processing-estimated", "time-at-completed-estimated", and "time-at-processing-estimated"
 - "job-complete-before" and "job-complete-before-time"
 - New Requirements
 - Required:
 - "insert-sheet", "job-error-sheet", "job-message-to-operator", "job-sheet-message", "page-delivery", "separator-sheets", "x-image-position", "x-image-shift", "x-side1-image-shift", "x-side2-image-shift", "y-image-position", "y-image-shift", "y-side1-image-shift", and "y-side2-image-shift"
 - Deprecated
 - "job-accounting-sheets", "media-input-tray-check", "presentation-direction-number-up" / "presentation-direction-number-up-default" / "presentation-direction-number-up-supported"
 - Obsolete
 - "page-order-received" / "page-order-received-default" / "page-order-received-supported", "current-page-order", "insert-after-page-number-supported", "job-accounting-output-bin-default", "job-recipient-name-default", and "user-defined-values-supported"
 - Moved to IPP Finishings 2.1 [PWG 5100.1-2017]
 - "finishings-col"
 - Moved to IPP Job Extensions v2.0 [PWG 5100.7]
 - "job-account-id", "job-accounting-user-id", "job-sheets-col", and "media-col"
- Latest draft: <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippv20-20210817.pdf>

IPP Enterprise Printing Extensions v2.0 (EPX)



- Updating PWG 5100.11-2010
- Changes
 - New Features
 - Job Storage feature (section 4.2), which provides "stored jobs" with more clearly defined semantics than the legacy Job Save and Reprint feature (now OBSOLETE)
 - Job Proof and Suspend feature (section 4.4.1) provides a simpler proof printing solution that is more congruent with vendor proof printing implementations already in the marketplace, replacing the legacy Job Proof Print feature (section 4.4.2), which is now DEPRECATED
 - Job Release feature (section 4.1) extends the legacy Secure Print feature and now interoperates with the Job Storage and Job Proof and Suspend feature to better support complex enterprise print workflow solutions
 - The Job Print Policy feature (section 4.3) was added by adopting the Get-User-Printer-Attributes operation registered in 2017;
 - Moved to IPP Job Extensions v2.0 [PWG5100.7]
 - Many attributes and keywords (see slide 10) because they don't specifically apply to the new "enterprise printing" focus of this specification
 - Moved to IPP Production Printing Extensions v2.0 (PPX)
 - "job-phone-number", "job-phone-number-default", "job-phone-number-supported", "job-recipient-name", "job-recipient-name-default", and "job-recipient-name-supported"
- Latest draft: <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippepx20-20210817.pdf>

IPP Driverless Printing Extensions v2.0 (NODRIVER)



- Updating PWG 5100.13-2012
- Changes
 - New Features
 - Job Presets adopted from the registration document where it was originally defined
 - Print Quality extends presets to support vendor print quality color customization
 - Color Modes support Printer color transformations with client-side previews
 - Message Catalog extensions to allow the Printer to supply "tooltips" and inline links to external help resources
 - "client-info" - replaces "document-format-details" for reporting client accounting information
 - Other minor enhancements
 - Received from IPP Transaction Based Printing Extensions (TRANS) [PWG5100.16-2013]
 - "jpeg-k-octets-supported", "jpeg-x-dimension-supported", "jpeg-y-dimension-supported", "pdf-k-octets-supported", "pdf-versions-supported", "print-scaling-default", "print-scaling-supported", "printer-dns-sd-name", and "printer-kind"
- Latest draft: <https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippnodriver20-20210501.pdf>