



The Printer Working Group

IPP Workgroup Session - Day 1

August 6, 2013

PWG F2F Meeting

Camas, WA



IPP WG Meeting Agenda

August 6, 2013

When	What
2:30 - 2:45	Status
2:45 - 3:30	IPP Self-Certification Manual 1.0
3:30 - 3:45	Break
3:45 - 5:00	IPP Implementers Guide 2.0

August 8, 2013

When	What
1:30 - 2:15	IPP FaxOut Service
2:15 - 3:00	IPP Shared Infrastructure Extensions (IPPSIX)
3:00 - 3:15	IPP Multifunction Approach
3:15 - 3:30	Next Steps



IPP WG Officers

- **IPP WG Co-Chairs:**
 - Paul Tykodi (TCS)
 - Ira McDonald (High North)
- **IPP WG Secretary:**
 - Michael Sweet (Apple)
- **IPP WG Document Editors:**
 - Ira McDonald (High North) – IPP Scan Service, IPP Shared Infrastructure Extensions (IPPSIX), IPP over HTTPS Transport Binding and “ipps” URI Scheme, LDAP Schema for Printer Services
 - Michael Sweet (Apple) – IPP Shared Infrastructure Extensions (IPPSIX), IPP over HTTPS Transport Binding and “ipps” URI Scheme, LDAP Schema for Printer Services, IPP FaxOut Service, IPP Transaction-Based Printing Extensions, IPP Finishings 2.0
 - Smith Kennedy (HP) - IPP Implementors Guide 2.0



- IETF RFCs in development:
 - IETF IPP over HTTPS Transport Binding and "ipps" URI Scheme
 - IETF Area Directory Review
 - IETF LDAP Schema for Printer Services (updates RFC 3712)
 - IETF Area Directory Review
- PWG Specifications in development:
 - IPP Everywhere Self-Certification Manual 1.0
 - Interim Draft
 - IPP FaxOut Service
 - Completed PWG Last Call
 - IPP Finishings 2.0
 - Interim Draft
 - IPP Implementors Guide 2.0
 - Interim Draft
 - IPP Scan Service
 - Initial Draft
 - IPP Shared Infrastructure Extensions (IPPSIX)
 - Interim Draft
 - IPP Transaction-Based Printing Extensions
 - PWG Last Call



- **Candidate Standards:**
 - PWG 5100.14-2013 - IPP Everywhere
 - PWG 5100.13-2012 - IPP: Job and Printer Extensions - Set 3 (JPS3)
 - PWG 5101.1-2013 - PWG Media Standardized Names 2.0 (MSN2)
 - PWG 5102.4-2012 - PWG Raster Format
- **Up-to-date pending IANA registrations online:**
 - <http://www.pwg.org/ipp/ipp-registrations.xml>
 - Continue to maintain this in parallel for new specifications
 - PWG version includes draft specifications that have reached prototype status



IPP Everywhere Interoperability

- July 2013 ipptool release includes an IPP Everywhere test suite
 - <http://www.cups.org/software.php>
 - Resolves all known issues, adds new Bonjour tool “ippfind”
- Sample PWG Raster data available on PWG FTP server:
 - <ftp://ftp.pwg.org/pub/pwg/ipp/examples/>
- To run the test suite:
 - Download and extract the PWG Raster sample files
 - Run “`ipptool -XV 2.0 printer-uri ipp-everywhere.test >results.plist`”
- Send reports to:
 - Michael Sweet (msweet@apple.com)
- Schedule:
 - Preliminary anonymous results at October 2013 F2F
 - Final anonymous results at February 2014 F2F



Document Editors Needed

- As we complete our work on IPP Everywhere, we need to identify editors for the IPP Multifunction specifications
- Need a new lead editor for IPP Scan Service
- Additional multifunction services need to be addressed: System Control, FaxIn, Orchestrator, Transform, Copy?
 - These should be straight-forward since they are essentially binding specs that reference the corresponding Semantic Model specs
 - See FaxOut as an example
- IPP Multifunction spec will likely be an update of IPP Everywhere with pointers to the corresponding IPP service specifications

IPP Everywhere Self-Certification Manual 1.0



- Current (interim) draft of IPP Everywhere Self-Certification Manual 1.0:
 - <ftp://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeveselfcert10-20130731-rev.pdf>
- Standards track document with tools:
 - Minor releases (1.x, 2.x, etc.) will be errata with PWG Call For Objection process
 - Major releases (1.0, 2.0, etc.) will go through PWG Last Call and Formal Approval process
 - Tools and document released together on pwg.org
- Known issues:
 - This is just a skeleton document and needs significant amounts of content for the test procedures
- Proposed schedule:
 - Prototype draft in Q3/Q4 2013

IPP Everywhere Self-Certification Manual 1.0 (con't)



- What we have today:
 - Client software coming in next round of (Linux) OS updates
 - IPP test tool (CUPS ipptool)
 - Bonjour test tool (CUPS ippfind)
 - Test files for ipptool
 - Sample PDF, JPEG, and PWG Raster files for testing
 - Interim draft of self-certification manual and license agreement
 - IPP Everywhere logo:



IPP Everywhere Self-Certification Manual 1.0 (con't)



- What we need:
 - WS-Discovery test tool
 - wsdddebug_client.exe tool is available from MS
 - Volunteer to write test script/program?
 - More IPP test files to test media-ready, printer-state-reasons, printer-supply, etc.
 - Volunteers?
 - Registration page(s) on pwg.org
 - Daniel Dressler has volunteered to do this work along with the PWG site update
 - Complete the Self-Certification Manual
 - Define test procedures and requirements in detail
 - Define exception process for tests that might fail
 - Register new logos as trademarks through ISTO
 - Guinea pigs to test the process and tools



The Printer Working Group

Scheduled Break



- Current (interim) draft at:
 - <ftp://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippig20-20130722-rev.pdf>
- Known Issues:
 - Relationship between "ipp-attribute-fidelity", "job-mandatory-attributes", and "pdl-override-supported", and what recommendations to make?
 - Best practices for detecting extensions/features such as IPP Transaction-Based Printing Extensions, etc.
 - IPP Multifunction is out-of-scope
- Proposed schedule:
 - Prototype draft Q3/Q4 2013



IPP Implementers Guide 2.0 (con't)

- “ipp-attribute-fidelity”: If ‘true’ then the attributes and values in the operation MUST be supported by the Printer. If not the Printer MUST reject the operation.
- “job-mandatory-attributes”: Lists the job attributes and values the printer MUST support. This allows the client to identify which values are mandatory. Sending “job-mandatory-attributes” with all of the Job Template attributes is equivalent to sending “ipp-attribute-fidelity” set to ‘true’.
- “pdl-override-supported”: Specifies whether the printer is capable of overriding intent embedded in the Document(s) with IPP Job Template attributes, and with what level of reliability: ‘attempted’ (RFC 2911), ‘not-attempted’ (RFC 2911), or ‘guaranteed’ (PWG 5100.11).



IPP Implementers Guide 2.0 (con't)

- Is there a series of operations including particular attributes that a client can use to reliably assess how to proceed with an IPP Printer that supports various “pdl-override-supported” values?
- “ipp-attribute-fidelity” ONLY guarantees that the IPP attributes and attribute values are supported by the Printer. It does NOT guarantee that the attributes and attribute values will affect the rendering of the job. So for “modern” IPP clients and printers, should “ipp-attribute-fidelity” always be ‘true’ if the Client is always able to acquire the attributes’ supported values?



The Printer Working Group

IPP Workgroup Session - Day 2

August 8, 2013

PWG F2F Meeting

Camas, WA

IPP WG Meeting Agenda



August 8, 2013

When	What
1:30 - 2:15	IPP FaxOut Service
2:15 - 3:00	IPP Shared Infrastructure Extensions (IPPSIX)
3:00 - 3:15	IPP Multifunction Approach
3:15 - 3:30	Next Steps



IPP FaxOut Service

- Current (stable) draft:
 - <ftp://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippfaxout10-20130730-rev.pdf>
- PWG Last Call results:
 - <ftp://ftp.pwg.org/pub/pwg/ipp/wd/lcrc-ippfaxout10.txt>
 - 11 members responded with a total of 43 comments
- Today we want to review the IPP FaxOut Service last call responses and finalize the hardcopy document changes based on this morning's discussions in the Semantic Model workgroup

IPP FaxOut Service

Hardcopy Document Support



- One common last call comment was concerning the conditionally required hardcopy document support
 - SM FaxOut 1.0 makes them unconditionally required
 - IPP FaxOut relaxed this to conditionally required for printers with scanners
- Having hardcopy document support is important:
 - Mobile devices are increasingly used as the primary UI for MFDs
 - FaxOut often makes use of hardcopy documents to capture signatures, etc.
- IPP FaxOut supports a richer version of SM FaxOut's `AddFaxOutHardcopyDocument`
 - SM has `InputSource`
 - IPP has `input-attributes` (collection) with `input-color-mode`, `input-media`, `input-orientation-requested`, `input-quality`, `input-resolution`, `input-sides`, and `input-source`
 - IPP version based on SM Copy Service 1.0



- Do we want to extend the IPP “input-attributes” member attributes to include the rest of the CopyInput elements?
 - “input-auto-skew-correction (boolean)”
 - “input-content-type (type2 keyword)”
 - “input-exposure (collection)” (auto-exposure, brightness, contrast, and sharpness member attributes)
 - “input-film-scan-mode (type2 keyword)”
 - “input-images-to-transfer (integer(0:MAX))”
 - “input-regions (1setOf collection)” (x-dimension, x-offset, y-dimension, and y-offset member attributes)
 - “input-scaling (collection)” (x-scaling and y-scaling member attributes)
- Do we want to extend the IPP Job/Document Description attributes to include a receipt of the “input-attributes” that were used (“input-attributes-actual”)?

IPP FaxOut Service

Last Call Comments



- DM1: Section 6.1 (Send-Hardcopy-Document)
 - Just discussed
- DM2: Section 7.1 (input-attributes)
 - Just discussed
- DM3: Section 7.2.2 (cover-sheet-info)
 - RESOLVED: The CONDITIONALLY REQUIRED applies to the cover-sheet-info attribute. Currently only "date-time", "from-name", "subject", and "to-name" are required, per SM FaxOut. All member attributes are optional, with defaults coming from "cover-sheet-info-default".
 - RESOLVED: The default value of from-name is job-originating-user-name but can be overridden - consider an admin faxing a document for their boss.
 - PENDING: The "date-time" element is part of the SM FaxOut specification - if it should not be there then we can remove it here.

IPP FaxOut Service

Last Call Comments



- DM4, LW2, LW4: Section 7.2.4 - 7.2.6 (number-of-retries, retry-interval, retry-time-out)
 - REJECTED: All of these come from SM FaxOut and were originally unconditionally required. The conformance requirements here are relaxed because we want to support streaming devices which were not considered in SM FaxOut, and the Printer can enforce limits via the -supported attributes (including just providing a range limited to a single value as set in the fax card). Moreover, while a fax card might enforce local maximums, why wouldn't a Printer allow the user to specify a smaller number of retries or a larger retry interval if allowed by law?
- DM5: Section 7.3.1 (destination-statuses)
 - REJECTED: It is impossible for a Client to reliably resend fax jobs if the destination status cannot be determined. We absolutely need this for Streaming Devices.

IPP FaxOut Service

Last Call Comments



- **DM6, LW3: Sections 7.4.23 - 7.4.25 (printer-fax-modem-xxx)**
 - **PENDING:** These are listed as required in SM FaxOut. I'm not sure what the privacy issues would be (it's your phone line, right, and the information is shown at the top of every page that is faxed, right?) but I have no strong feelings about making these unconditionally required.
- **GP1, LW1, SK2: 300 second job history**
 - **RESOLVED:** The 300 second job history requirement comes from SM FaxOut. Clarified that the requirement is for job history and not the whole job.
- **GP2: Scaling and Color Space Conversion requirements**
 - **RESOLVED:** If the IPP Printer reports color fax support, the client may send a color document to fax. But if the receiver does not support color fax we want the IPP Printer to send it B&W unless ipp-attribute-fidelity and print-color-mode are specified to force color fax.

IPP FaxOut Service

Last Call Comments



- **GP3: Requirement to retransmit a current page**
 - **RESOLVED:** Retransmission of the current page is a basic fax protocol requirement; all MFDs I know of can buffer at least 1 page of fax data, and most buffer a lot more...

We did have a lot of discussion about that last year, which resulted in all of the language to support low-end MFDs that could only buffer a single page and could not handle full retransmission.

- **GP4: Capability Reporting**
 - **RESOLVED:** The Printer reports its supported scaling/colorspace conversion capability by reporting whether it supports color and what PWG Raster resolutions and types it supports. And a fax-capable MFD already has to support scaling (to the negotiated resolution) and probably dithering and colorspace conversions from its scanner.

The only required format is PWG Raster, which has several attributes that describe the supported resolutions and color spaces.

IPP FaxOut Service

Last Call Comments



- KO1: "retry-timeout" vs "retry-time-out"
 - RESOLVED: Changed to "retry-time-out" as requested.
- LW5: Section 7.2.6 (retry-time-out) vs. 7.2.5 (retry-interval)
 - RESOLVED: retry-time-out is total retry time ("don't try sending for more than 3 hours"), retry-interval specifies the interval between each retry.
- MS1: Section 7.1.1 (missing reference to InputSource)
 - "Note: The Semantic Model defines a single InputSource element, which does not capture all of the necessary input intent. IPP FaxOut instead maps elements from the CopyInput group to do so."
 - RESOLVED: Changed with additional document references.
- MS2: Section 7 (input-attributes-actual Document Description attribute)
 - RESOLVED: Added under section 7.5.

IPP FaxOut Service

Last Call Comments



- MS3: Section 7.3 (input-attributes-actual Job Description attribute)
 - RESOLVED: Added as section 7.3.2.
- MS4: Section 7.4.3 (list of values not updated)
 - “The required list of cover-sheet-info member attributes was not updated to use the new names "from-name" and "to-name".
 - RESOLVED: Changed as requested.
- MS5, SO1, SO2, SO3: Section 8.2 (fax-modem-xxx)
 - “Section 8.2 does not mention that the 'fax-modem-xxx' keywords are defined in PWG 5107.3.”
 - RESOLVED: Added reference and removed "new" from the descriptions since many are not new.

IPP FaxOut Service

Last Call Comments



- **MS6: Section 8.2 (no connecting-to-device)**
 - “Section 8.2 does not define the equivalent of the 'connecting-to-device' value from "printer-state-reasons". Should we define keyword(s) to describe this and/or the following intermediate states: Dialing, Answered, Training, and Connected?”
 - RESOLVED: Added 'connecting-to-destination' and 'connected-to-destination', and reworded some of the 'fax-modem-xxx' definitions based on mailing list discussions.
- **MS7: Section 9.2 (conditional conformance requirements)**
 - “Section 9.2: Add input-attributes-actual job description attribute to list for scan-capable printers, add a new scan + document object paragraph for input-attributes-actual document description attribute.”
 - RESOLVED: Added as requested.
- **MS8: Section 12.1 (add input-attributes-actual)**
 - RESOLVED: Added registrations as requested.

IPP FaxOut Service

Last Call Comments



- **MS9: Section 12.2 (re-registering fax-modem-xxx keywords)**
 - RESOLVED: Removed registrations as requested.
- **MS10: Section 13.1 (missing references)**
 - "Section 13.1: Add reference to 5100.5 (document object) and 5108.04 (copy service)"
 - RESOLVED: Added references.
- **MS11: Section 13.1 (missing reference)**
 - Section 13.1 is missing a reference to PWG 5107.3.
 - RESOLVED: Added reference.
- **SK1: Section 4.1.2 (spooling vs. streaming)**
 - RESOLVED: Clarified spooled vs. streamed formats.
- **SK3: Section 4.1.4 (bad reference to printer-fax-log-uri)**
 - RESOLVED: Fixed reference to 7.4.22. Also see SK11.

IPP FaxOut Service

Last Call Comments



- **SK4: Section 4.2 (MUST NOT for Print-Job)**
 - RESOLVED: This requirement is only for FaxOut (/ipp/faxout) and matches SM FaxOut.
- **SK5: Section 4.3 (why include margins?)**
 - RESOLVED: It is more for making the FaxOut service look as much like an IPP Everywhere printer as possible.
- **SK6: Section 4.3 (pages-per-minute-xxx)**
 - "Section 4.3: "pages-per-minute" and "pages-per-minute-color" - how will this be determined for fax?"
 - PENDING: We should define this; probably as a function of the fax modem technology being used. (i.e. maximum bit rate / constant for page bit size = pages-per-minute)
- **SK7: Section 4.3 (why no include-fax-header attribute?)**
 - RESOLVED: Legal requirements make this mandatory and there is no control over the fax header in the SM FaxOut spec.

IPP FaxOut Service

Last Call Comments



- SK8: Section 4.3 (Note 4 has no references)
 - “Section 4.3: "Note 4" seems to not have any attributes that reference it. Was this supposed to be referenced by the "input-source-supported" attribute?”
 - RESOLVED: Yes, but we are also missing: input-attributes-default, input-attributes-supported, input-color-mode-supported, input-media-supported, input-orientation-requested-supported, input-quality-supported, input-resolution-supported, and input-sides-supported

IPP FaxOut Service

Last Call Comments



- **SK9: Section 6.1 (Send-Hardcopy for streaming devices)**
 - Section 6.1: Send-Hardcopy-Document operation and streaming devices and a resend - will the client be expected to resend if the job included a Send-Hardcopy-Document operation?
 - **RESOLVED:** Yes, but then the client will need to provide instructions to the user (replace the document to be faxed and try again). But for hardcopy documents the printer would probably control the buffering/scan rate to allow for retries of the current page. Also, pretty much every MFP I've used has scanned the entire document into memory before faxing. A client resubmission would use Create-Job + Send-Hardcopy-Document...

In any case, I don't think we need to change anything here.

IPP FaxOut Service

Last Call Comments



- **SK10: Section 7.2.2.3 (document formats for logos)**
 - **PENDING:** We don't say what the supported formats are, here or in SM FaxOut. Maybe we should add a "logo-uri-formats-supported (1setOf mimeType)" Printer attribute? And (conditionally) require JPEG?

The "logo-uri-schemes-supported" Printer attribute tells you which URI schemes are supported.
- **SK11: Section 7.4.2 (printer-fax-log-uri)**
 - "Section 7.4.22: How is this intended to work? Can this be a URI to a service on a host other than the one hosting the IPP FaxOut Printer Object? What should happen if the fax log hits a size limit? Is the size limit advertised?"
 - **RESOLVED:** Added reference and requirement for PWG Common Log Format, documented that size limits and rotation are implementation-defined. Also specified that the attribute is READ-WRITE and must be listed in the "printer-settable-attributes-supported" attribute.

IPP FaxOut Service

Last Call Comments



- **SK12: Section 7.4.26 (retry-interval-default)**
 - **RESOLVED:** Yes, added the "and MUST reflect any local regulatory requirements" bit to the end here and for 7.4.28.
- **SK13: Section 7.4.27 (retry-interval-supported)**
 - "Section 7.4.27: What is the point of retry-interval-supported for streaming devices? And which entity is responsible for keeping count for the retries? Is it the IPP FaxOut device, or the client?"
 - **RESOLVED:** Added a MAY for streaming devices, which may retry transmission for a single page.



The Printer Working Group

Scheduled Break

IPP Shared Infrastructure Extensions (IPPSIX)



- Current (interim) draft:
 - <ftp://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippsix10-20130730.pdf>
- Proposed schedule:
 - Prototype draft Q3 2013
 - Stable draft, WG Last Call Q4 2013



IPP Multifunction Approach

- We currently are on a “one specification per service” trajectory for IPP
 - but Semantic Model WG is opting for a single document for Semantic Model 3.0 describing all services
- Do we want to do a single IPP specification that defines all of the services like SM 3.0?
 - If so, what would we call it? IPP Multifunction? IPP/3.0? IPP Everywhere 2.0?
 - What would be the scope?
 - Full revision of RFC 2910/2911?
 - Partial revision with back references to existing specs?
 - What about IPP Everywhere?
 - Do we revise it to pull in the new single spec, or
 - Do we replace it with the new single spec?



IPP WG Next Steps

- **IPP Everywhere**
 - Virtual interoperability event for IPP Everywhere through February 2014 F2F
- **IPP + Multifunction**
 - PWG Formal Vote of IPP FaxOut Service in Q3 2013
 - Initial/interim working drafts of other specifications starting in Q1/Q2 2014
- **IPP Transaction-Based Printing Extensions**
 - Complete PWG Last Call and review last call comments
 - PWG Formal Vote in Q4 2013
- **IPP Shared Infrastructure Extensions**
 - Prototype working draft in Q3 2013



IPP WG Next Steps

- Continue working on IPP Everywhere Self-Certification Manual 1.0
 - Prototype working draft in Q3/Q4 2013
- Continue working on IPP Implementors Guide 2.0
 - Prototype working draft in Q3/Q4 2013
- Start work on IPP Finishings 2.0 (Mike)
 - Update to PWG 5100.1 with new finishings and finishings-col definitions
 - Prototype working draft in Q4 2013/Q1 2014
- New IPP Health Assessment Attributes Extension (Mike?)
 - To provide IPP attributes from PWG 5110.1
 - Initial working draft in Q4 2013



IPP WG Info / Participation

- We welcome participation from all interested parties
- IPP Working Group web page
 - <http://www.pwg.org/ipp/index.html>
- Subscribe to the IPP mailing list
 - <http://www.pwg.org/mailhelp.html>
- IPP WG holds bi-weekly phone conferences announced on the IPP mailing list
 - Next conference calls August 19 and September 9, 2013 at 3pm ET (second meeting delayed due to Labor day)



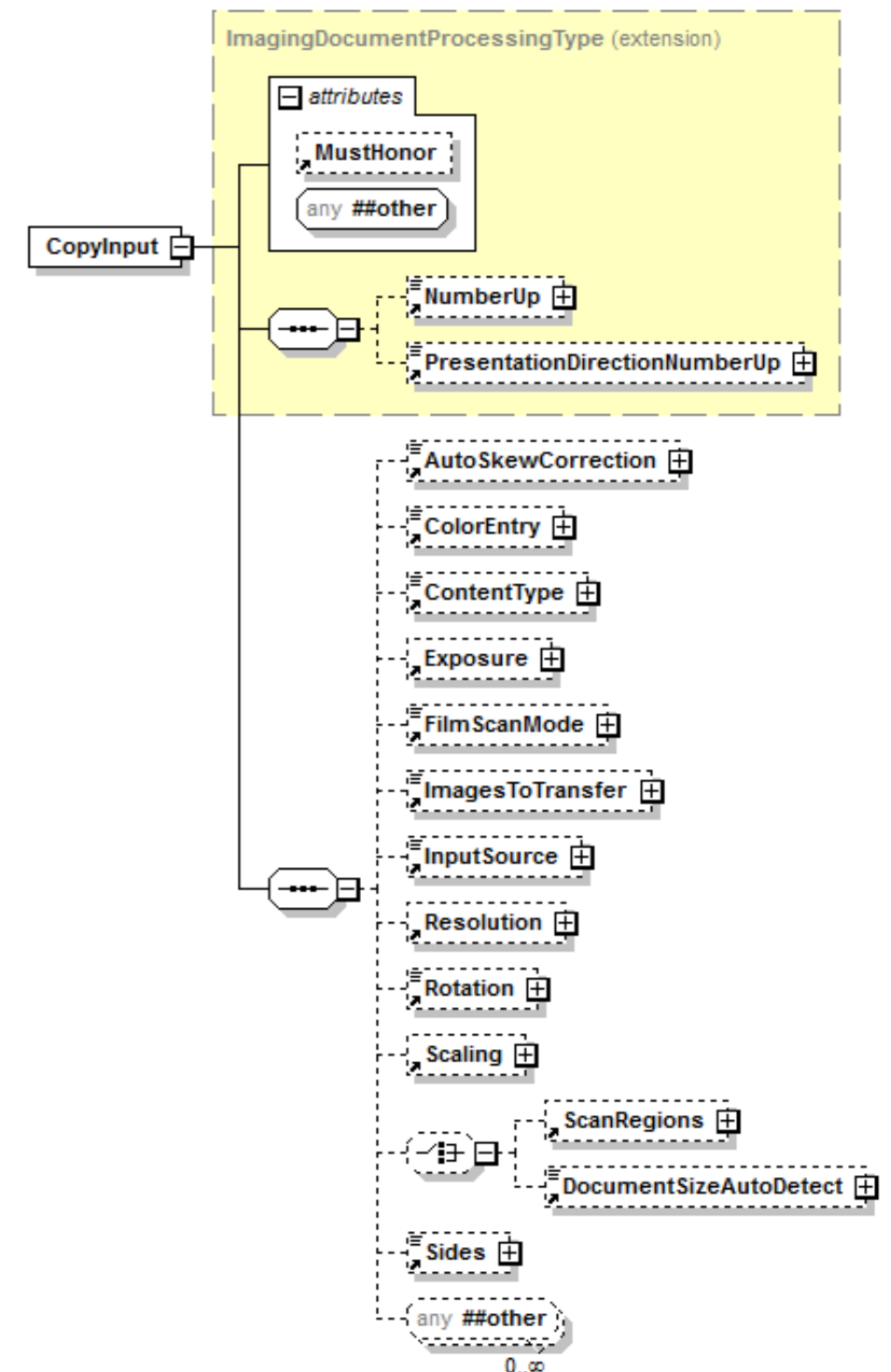
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Backup Slides

SM CopyInput DocumentProcessing Elements



- AutoSkewCorrection = boolean
- ColorEntry = input-color-mode and/or pwg-raster-document-type
- ContentType = Auto, Halftone, LineArt, Magazine, Photo, Text, TextAndPhoto
- Exposure = AutoExposure OR Brightness + Contrast + Sharpness
- FilmScanMode = BlackAndWhiteNegativeFilm, ColorNegativeFilm, ColorSlideFilm, NotApplicable
- ImagesToTransfer = integer
- InputSource = input-source
- Resolution = input-resolution
- Rotation = input-orientation-requested



SM CopyInput DocumentProcessing Elements (con't)



- Scaling = AutoScaling OR ScalingHeight (integer percent) + ScalingWidth (integer percent)
- ScanRegions = list of rectangles
- DocumentSizeAutoDetect = boolean
 - IPP FaxOut uses input-media with standard media size names or 'auto' for auto-detect
- Sides = input-sides
- Not Included in SM CopyInput:
 - Media (input-media), although ScanRegions can be used
 - Quality (input-quality)
- Not Included in SM FaxOut:
 - Everything but InputSource

