IPP Working Group Session

December 8, 2010

Irvine, CA

PWG F2F Meeting

IPP WG Meeting Agenda

2:15 - 2:20	Introductions, Minute Taker, Agenda Review
2:20 - 2:30	Current IPP WG status
2:30 - 3:00	IPP/2.0 SE Last Call Comments
3:00 - 4:45	Discuss IPP Everywhere
4:45 - 5:00	Action Items and 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:
  - Tom Hastings (retired Xerox) – IPP JPS2
  - Ira McDonald (High North) – IPP Version 2.0
  - Michael Sweet (Apple) – IPP Version 2.0

IPP WG Status

- PWG Formal Vote for JPS2 concluded
  - 10 yes, 0 no, 0 abstain
  - 1 member had comments (conformance text)
- PWG Last Call for IPP/2.0 SE concluded
  - 15 review acknowledgments
  - 5 members had editorial comments (formatting and conformance text)

IPP/2.0 Second Edition

- Section 1.1:
  - line 184..185.....This sentence needs to be reworded, suggest (.....more supplies such as paper and toner, and have a larger memory capacity that the other classes.)
  - DONE - reworded sentence as suggested in section 1.1

IPP/2.0 Second Edition

- Sections 4.x:
  - So, what does "MUST support" mean in Sections 4.1 thru 4.3?
  - DONE - former "MUST support" (now REQUIRED) in sections 4.x has the regular standards meaning

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IPP/2.0 Second Edition

- Section 4.1:
  - RFC2246 is not listed in this section but it is listed in Table 1 as RECOMMENDED
  - DONE - added to SHOULD list in section 4.1 (IPP/2.0)

IPP/2.0 Second Edition

- Section 4.2:
    - RFC4346 is listed in Section 4.1 but not again in 4.2 even though it is listed in Table 1 as RECOMMENDED for both v2.0 and v2.1 (and v2.2). I would suggest that RFC4346 be listed again in 4.2. (RECOMMENDED RFC5107.2 is listed in section 4.1 and again in section 4.2.)
    - RFC2246 is not listed in this section but is listed in Table 1 as RECOMMENDED
    - DONE - added RFC2246 and RFC4346 to SHOULD list in section 4.2 (IPP/2.1)

IPP/2.0 Second Edition

- Section 4.3:
  - RFC5100.7 is already listed as REQUIRED in 4.2. Why is listed again here? It should be pulled in by default from line 334 "An IPP/2.2 printer MUST support the IETF or PWG specifications defined for IPP/2.1 plus the following"
  - DONE - deleted PWG5100.7 from REQUIRED list in section 4.3 (IPP/2.2)
  - I would suggest that RFC4346 be listed again in 4.3 (Still Recommended)
  - RFC2246 is not listed in this section but is listed in Table 1 as RECOMMENDED
  - DONE - added RFC2246 and RFC4346 to SHOULD list in section 4.3(IPP/2.2)

IPP/2.0 Second Edition

- Section 5:
  - Section 5 Heading, the subsections and the tables 3, 4, and 5 listing the conformance requirements for the operations in IPP/2.0, IPP/2.1 and IPP/2.2 are all labeled "Required Operations in...". However they also include Recommended and Optional operations. This is confusing. Perhaps re-labeling Sections and tables (other than Table 2) "IPP/XXX Conformance Requirements-Operations" might be clearer?
  - DONE - Revised text in sections and deleted REQUIRED from titles and tables

IPP/2.0 Second Edition

- Section 6:
  - In a similar way, Section 6 Heading, subheadings, tables (other than Table 6) and introductory paragraph all refer to "Required Attributes" when in fact some recommended and optional attributes are also included and referenced in notes. It is understood that may reflect a desire to explain why the attribute is not required, but to have a table labeled Required Attributes which contains attributes which are recommended or optional was found confusing. I suggest that the "Required" table contain just Required attributes. If it is necessary to explain why some attributes are not required perhaps a separate table or just a separate paragraph somewhere else in the document could identify these attributes and the rational.
  - DONE - Revised text in section and deleted REQUIRED from title and table; however table was NOT restructured as proposed to avoid structural breakage with IPP/2.0 First Edition

IPP/2.0 Second Edition

- Section 6.1:
  - Although the text in this section and in the subsequent sections does explicitly mention that the attributes included in table 6 are required in IPP/2.0,/2.1 and /2.2, the subsection heading "Original Required IPP/1.1 Attributes" might not call enough attention to the fact that these are IPP/2.x required attributes as well. Perhaps re-labeling the subsection "Original Required IPP/1.1 Attributes also Required for IPP/2.0,/2.1 and /2.2", something of that sort would help.
  - DONE - Revised text in section and deleted REQUIRED from title and table; however table was NOT retitled as proposed to avoid structural breakage with IPP/2.0 First Edition

IPP/2.0 Second Edition

- Section 6.2:
  - Note 7 is not indented.
  - DONE - fixed indentation of note 7 in section 6.2

- Section 6.2
  - Print-quality/Print-default/Print-quality-supported
  - Printer-resolution/printer-resolution-default/printer-resolution-supported
  - We suppose these two attributes are basically the same resource.
  - Our recommendation is to have some guide line on how to use or change the Printer-resolution attributes as an option.
  - DONE - Added new note 8 to section 6.2 and table 7, explaining that "print-quality" has higher precedence than "printer-resolution" when they conflict (per Mike Sweet)

IPP/2.0 Second Edition

- Section 6.3:
    - RFC5100.7 is stated as required in section 4.2 and Table 1. However, there are at least two attributes, "document-name-supplied" and "document-format-supplied" which are REQUIRED in RFC5100.7 but not listed in Table 8. They are listed in Table 9.
    - DONE - *copied* "document-name-supplied" and "document-format-supplied" to table 8 in section 6.3 for *Job* and kept in table 9 in section 6.4 for *Document* object per PWG 5100.5

IPP/2.0 Second Edition

- Section 6.3:
  - The printer-alert and printer-alert-description attributes are the only entries with conformance changes between versions not mentioned in the notes. For clarity, this section should include a note about the status change from table 7.
  - Notes 2 and 4 in section 6.4 already do this for the same change to other attributes between tables 8 and 9.
  - DONE - Added note 10 to section 6.3 and table 8

- Section 6.3:
  - The media-col, media-col-default and media-col-supported entries in table 8 all refer to note 1, but the note only describes the media-col entry.
  - DONE - Revised note 1 in section 6.3 to name all 3 attributes

IPP/2.0 Second Edition

- ## Section 6.3:
  - It may just be me, but I think it might help to have some explanation of notes 1 & 2, which state that the collection but not all members of the collection are required.
  - DONE - Revised notes 1 and 2 in section 6.3 to clarify that NOT all member attributes are automatically REQUIRED in a given collection attribute

- ## Section 6.3, Table 8:
  - The proof-print and which-jobs-supported attribute entries in the table incorrectly refer to note 3 instead of the actual reference in note 4.
  - DONE - Revised table 8 to correct reference to note 4

IPP/2.0 Second Edition

- Section 11.1:
    - I will vote yes, but would you please take a look at the spec on line 652, where the link should belong to the previous line and this line should begin with a new reference for "[PWG5100.9]", which currently stuck at the end of the link to the previous reference?
    - DONE - Reformatted PWG 5100.8 and PWG 5100.9 in references

CUPS Goodies

CUPS ipptool

- http://www.cups.org/software.php
- IPP/1.1, IPP/2.0, and IPP/2.1 conformance tests
  - Working on IPP/2.2 conformance test
- Binaries available for Linux, Mac OS X, and Windows
- Thousands of downloads since April
- Features in October release:
  - "Continue past errors" mode
  - Conditional tests based on success/failure of previous test
  - Timeout, authentication, and ipps: support
- New release coming in January:
  - Validate-Job tests
  - Tests for some PWG 5100.x specifications
  - IPP/2.2 conformance test?

CUPS ipptool

- Simple text-based test files:

```
{
  NAME "Name of test"
  OPERATION Get-Printer-Attributes
  GROUP operation-attributes-tag
  ATTR charset attributes-charset "utf-8"
  ATTR naturalLanguage attributes-natural-language "en"
  ATTR uri printer-uri "$uri"
  STATUS successful-ok
  EXPECT printer-uri-supported OF-TYPE uri
}
```

CUPS ippserver (new!)

- Sample IPP/2.0 conforming server implementation
  - Current implementation saves jobs to a directory/folder
  - Also provides Bonjour service registration and simple HTTP status page
  - Ultimate goal is to provide as part of CUPS library and have it abstract away the basic semantic model data and behaviors with entry points that actually do the work (print, cancel, etc.)
  - LGPL2
- Part of the CUPS 1.5 developer snapshots at:
  - http://www.cups.org/software.php

IPP Everywhere

IPP Everywhere Topics

- Definitions
- Use Cases
- Document Formats
- Color Management
- Media Selection
- Proximity
- Scoping and Conformance Levels
- Requirements Outline

Definitions

- Clients
  - Mobile Internet Device
  - Notebook computer
  - Desktop computer
  - Server application
  - Other network-enabled device (refrigerators, TVs, etc.)
  - No printer/vendor-specific drivers
- Printers
  - Low-cost personal inkjet/laser
  - Mid-range workgroup inkjet/laser
  - High-end enterprise inkjet/laser
  - Kiosks/Printing services

Definitions

- Content:
  - Photos
  - Web pages
  - Email
  - Reports/presentations
  - Books
  - Local and remote storage

Use Cases

- Pete is traveling and wants to print a list of local pubs to visit to a printer in the hotel he is staying at. He discovers the printer by geographic location.

- Jane wants to print a photo from her IP-enabled phone to a photo printer. She discovers the printer on the local network and chooses it based on photo printing capabilities.

Use Cases

- Joe wants to print a document at a coffee shop. He discovers a paid print service offered by the coffee shop and uses third-party identification and authorization to complete the transaction and collect his document.

- Ira wants to print a secure document from his Mobile Internet device to a secure printer. He chooses a local printer with the appropriate security capabilities.

Use Cases (Proposed)

- Delayed print, e.g., the printer is offline when the print is sent
  - Store externally (Cloud, etc)?
  - Have a timeout (cancel, resubmit)?
  - Forward to another device?

- Printing to multiple destinations, i.e., fan-out
  - Printing to mom & grandma
  - Sending document to manager & manager's manager
  - Sending document to team members (assuming I am manager)

Document Formats

- Require support for raster format(s)
  - One lossless, multipage format + (maybe) one lossy format
  - Must be low overhead for client and printer
  - IPP provides supplemental document compression - make recommended but not required
  - Proposal for CUPS Raster (v2) as the lossless format and JPEG (W3C JFIF, EXIF) for lossy/photo printing
  - Other proposed raster formats pending

- Make support for vector format(s) optional/ recommended
  - PDF 1.4/1.5 for recommended vector format
  - Need to investigate DRM issues
  - Need to think about format version support

Color Management

- Output rendering intent for out-of-gamut colors
- Device ICC color profile(s) for soft proofing
- "print-color-mode (type2 keyword)" to pick between color and monochrome

Media Selection

- Additional media-col member attributes:
    - media-bottom-margin (integer), media-left-margin (integer), media-right-margin (integer), media-top-margin (integer) to provide document margins - printer can choose proper mode to satisfy?
    - media-source (type3 keyword) to specify the input source/ tray?
    - Media size, type, source, and margins often go together, but should these be first-class attributes?
    - Also media-*-supported first-class attributes to list supported values?
    - Extend Get-Printer-Attributes to filter on attributes other than document-format?
        - Useful for getting answers like "what are the supported media/margins for duplex printing?"

Proximity

- Proximity influences discovery, transport, and format choices
- Local (Wi-Fi/subnet) printing:
  - Discovery does not require dedicated infrastructure
  - Direct to Printer
  - High bandwidth, low-latency network
- Regional (intranet) printing:
  - Discovery requires dedicated infrastructure
  - Direct to Printer or multi-hop printing through server/service
  - Medium bandwidth, moderate-latency network
- Global (Internet/Cloud) printing:
  - Discovery requires dedicated infrastructure
  - Multi-hop printing through server/service and multiple firewalls
  - Low bandwidth, high-latency network

Scoping and Conformance Levels

- Which use cases/proximities do we tackle for IPP Everywhere?

- Do we want multiple conformance levels?

Requirements Outline

- Whiteboard discussion

IPP WG Next Steps

- **IPP Version 2.0 Second Edition**
  - PWG Formal Vote to begin soon
- **IPP 2.0/2.1/2.2 Interoperability Testing**
  - Interoperability event in Q2/Q3 2011
- **IPP Everywhere**
  - Initial draft requirements in Q1 2011
  - Initial draft specifications in Q1 2011
  - PWG Last Call of Requirements in Q2 2011
  - Prototype draft specifications in Q3 2011
  - Interoperability event in Q4 2011

IPP WG Info / Participation

- We welcome participation from all interested parties
- IPP Working Group web page
  - http://www.pwg.org/ipp/index.html
- IPP Working Group wiki
  - http://pwg-wiki.wikispaces.com/IPP
- 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 call is January 10, 2011 at 4pm (EST)