IPP Working Group Session

May 25-26, 2011

Webster, NY

PWG F2F Meeting

IPP WG Meeting Agenda

Wednesday, May 25

1:00 - 1:10	Introductions, Minute Taker, Agenda Review
1:10 - 1:30	Current IPP WG status, charter update
1:30 - 3:00	Use Case Shoot-Out and Design Requirements
3:00 - 3:15	Break
3:15 - 5:00	PWG Raster

IPP WG Meeting Agenda

Thursday, May 26

1:00 - 3:00	Job and Printer Extensions - Set 3
3:00 - 3:15	Break
3:15 - 4:00	IPP over USB
4:00 - 4:45	IPP Scan
4:45 - 5:00	Next steps, wrap-up

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 Version 2.0, IPP Everywhere, IPP JPS3, IPP Scan, IPP over HTTPS Transport Binding and "ipps" URI Scheme, LDAP Schema for Printer Services
  - Michael Sweet (Apple) – IPP Version 2.0, IPP Everywhere, IPP JPS3, PWG Raster, IPP over HTTPS Transport Binding and "ipps" URI Scheme, LDAP Schema for Printer Services

IPP WG Status

- Several IPP Everywhere specs in development:
  - IPP Everywhere First Edition (EVEPRT)
  - IPP: Job and Printer Extensions - Set 3 (JPS3)
  - IPP over HTTPS Transport Binding and "ipps" URI Scheme
  - PWG Raster
  - IPP Scan

- Up-to-date pending IANA registrations online:
  - http://www.pwg.org/ipp/ipp-registrations.html (+ .txt)
  - Will maintain this in parallel due to IANA processing time

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
- New release coming soon:
  - Validate-Job tests
  - Tests for PWG 5100.x specifications
  - Tests for optional IPP/1.1, 2.0, and 2.2 bits
  - IPP/2.2 conformance test

CUPS ippserver

- 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 upcoming CUPS 1.5 release at:
  - http://www.cups.org/software.php

Use Case Shoot-Out and Design Requirements

- Which use cases from Tuesday's Use Case BOF apply to IPP Everywhere?
  - Any we want to make out-of-scope?
- Which use cases apply to JPS3?
  - Any we want to make out-of-scope?
- Which use cases apply to PWG Raster?
  - Any we want to make out-of-scope?
- Are there other compelling use cases we have not discussed?

PWG Raster Format

- Current draft:
  - ftp://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippraster10-20110327-rev.pdf
- Abstract: This standard defines a simple raster format for printing, scanning, and facsimile. The format includes support for a small set of standard and device color spaces and bit depths, and defines Printer description attributes for IPP that enable a Client to generate or request a supported raster stream.

PWG Raster Format

- Samples files at:
  - http://ftp.easysw.com/pub/cups/examples/ PWGRasterSamples-150dpi 2011-05-18.zip
  - http://ftp.easysw.com/pub/cups/examples/ PWGRasterSamples-180dpi 2011-05-18.zip
    - WARNING: 40MB downloads, 80MB worth of data
  - 150dpi/180dpi files for black-1, cmyk-8, sgray-8, srgb-8, and srgb-16
  - Representative documents for email, line art, maps, photos, and web pages

- Long term - host on ftp.pwg.org, and in what directory?

PWG Raster Format

- Viewer program (Windows/Mac/Linux) at:
  - http://www.easysw.com/~mike/rasterview/
  - Version 1.3 includes support for PWG Raster

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PWG Raster Format
Known Issues

- Would be nice to have total page count (if known)
  - Allows for optimization in printers
- Would be nice to have the coordinate space of image (flip/rotate on back side)
  - Informational so that the printer knows that the client provided the correct image data
  - Could be used for fan-out/cloud situations where the service has to re-flip/rotate the back side images
- Would be nice to have the bounding rectangle of any content to be imaged on the page
  - Allows for optimization in printers
- Some confusion about why we need pwg-raster-resolutions-supported
  - Will be adding explanatory text to the definition

PWG Raster Format Known Issues

- Some confusion about the compression algorithm
  - Will be adding examples for 1-bit grayscale and 32-bit CMYK images
- Some confusion about back side image transforms:
  - Will be adding more explanatory/example text
- Need to set conformance requirements
  - pwg-raster-mode-supported: sgray-1, sgray-8, and srgb-8?
  - feed-orientation from PWG 5100.11 (JPS2)
- May need to sync up use cases and design requirements from Tuesday's Use Case BOF

PWG Raster Format
Currently Out-of-Scope

- Length fields to support random access to pages in PWG Raster files

  - Makes streaming impossible on low-resource clients
  - Could make the length optional in the header, but who would implement (not CUPS)?
  - Printers capable of doing random access in raster files can have a separate index or use their own internal format
  - Printers capable of doing random access in raster files probably also accept PDF

- Index tables to support random access to pages in PWG Raster files

  - Not compatible with CUPS Raster format
  - See above

PWG Raster Format Currently Out-of-Scope

- Per-page compression
  - Not compatible with CUPS Raster format
- Embedded job ticket information
  - Will add more text on this, e.g., "the CUPS Raster page header contains many embedded job ticket attributes derived from the PostScript page device dictionary, however ..." as a hint to vendors that want to use PWG Raster with a dumb pipe (USB printer class, etc.)

Total Page Count

- Proposal:
  - Add PageCount (integer, 0 to $2^{31}-1$) to page header
  - 0 means "I don't know how many pages"
  - \> 0 means "this is how many pages are in the entire file"
  - Every page gets the same value
- Would use the "cupsInteger[0]" slot from the CUPS Raster definition; this slot is already used by several printer drivers for this information
- The "cupsInteger[n]" (n = 0 to 15) slots in the CUPS Raster page header are there for driver-specific stuff, so we can re-use them however we like...

Bitmap Coordinate Space

- Proposal:
  - Add HorizontalTransform(integer, -1 or 1) and VerticalTransform(integer, -1 or 1) to the page header
  - "Normal" pages have values of 1 and 1
  - "Rotated" pages have values of -1 and -1 (180 degree rotation)
  - "Flipped" pages have values of 1 and -1 (vertical flip) or -1 and 1 (horizontal flip)

- Would use the "cupsInteger[1]" and "cupsInteger[2]" slots from the CUPS Raster definition

Image Box

- Proposal 1:
  - Use existing ImagingBBox (4 x integer) from page header
  - Simple bounding box in (integer) points

- Proposal 2:
  - Add ImageBottom (integer, 0-2^{32}-1), ImageLeft (integer, 0-2^{32}-1), ImageRight (integer, 0-2^{32}-1), and ImageTop (integer, 0-2^{32}-1) to the page header
  - Simple bounding box in pixels/lines

- Proposal 2 would use the "cupsInteger[3]" through "cupsInteger[6]" slots from the CUPS Raster definition

IPP: Job and Printer Extensions - Set 3 (JPS3)

- Current draft:
  - ftp://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippjobprinterext10v3-20110517-rev.pdf
- Abstract: Printing on new operating systems, distributed computing systems, and mobile devices emphasizes the challenges of generating document data, discovering available Printers, and communicating that document data to a Printer. This specification adds additional attributes and operations to IPP to better support generic, vendor-neutral implementations of printing in these environments.

JPS3
Known Issues

- Need to flesh out the conformance requirements for the printer-supply attribute

- Fix remaining cross-references

- Make sure we document that xxx-preferred values may not be administratively set (READ ONLY)
  - Probably some other values that need the same treatment

- Localization
  - Do we want to tackle it?
  - Came up in the April 2011 Open Printing F2F meeting

- Still have the final use cases and design requirements to fill in for section 3

Update to PWG 5101.1?

- Current specification does not register any of the media keywords with IANA

- Standard/common photo sizes are not represented

- Do we want to do an update?

IPP over USB Proposal

- Proposal by Andrew Mitchell from HP and others:
  - ftp://ftp.pwg.org/pub/pwg/ipp/whitepaper/draft-ippusbspecification-20110428.pdf
- Submitted to the USB IF last week
- Provides a (simple) transport binding of HTTP and IPP over USB

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IPP: Scan Extension

- Initial draft:
  - ftp://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippscan-20110404.pdf
- Abstract: This standard defines an extension of IPP Everywhere that adds scan functionality to the protocol. The extension is built on top of the existing IPP Everywhere protocol and utilizes existing functionality whenever possible. Where new functions or keywords are required, they are formed using existing IPP formats, conventions and semantics.

  Devices implementing IPP-Scan will allow users to access driverless scan functionality from a variety of clients using a variety of connection methods.

IPP WG Next Steps

- IPP 2.0/2.1/2.2 Interoperability Testing
  - Interoperability event in Q2/Q3 2011
- IPP Everywhere First Edition
  - Initial working draft of updated LDAP Schema for Printer Services in Q2/Q3 2011
  - Prototype draft specifications in Q3/Q4 2011
  - Interoperability event for IPP Everywhere First Edition in Q2 2012
- IPP Everywhere Second Edition
  - Interim working draft of IPP Scan in Q3 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 June 13, 2011 at 1pm (EST)