Printer Applications

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Topics

- Talking about two Printer Applications and the Printer Application Framework today:

    - ippeveprinter (as extended in the ippsample/ippeveselfcert projects)

    - LPrint

    - PAPPL

- Each has a slightly different focus and capabilities

- All have a common heritage (CUPS)

- Also want to say a few things about iOS®/macOS® compatibility

Printer Applications Are…

- A replacement for CUPS printer drivers

  - Options are replaced by IPP attributes

  - Driver-specific UI is provided by the Printer Application

- An implementation of an IPP Everywhere™ Printer

  - Basic IPP Everywhere support only requires PWG Raster, plus JPEG for color printers

  - CUPS library and sample code provide an easy-to-use framework for implementations

- Compatible with CUPS 1.4 and later

  - Can be compatible with iOS® 5 and later with a few small additions (DNS-SD subtype and "image/urf" document format)

  - macOS 10.8® and later support IPP Everywhere™ via the command-line, can be used from the GUI with the same changes needed for iOS support

ippeveprinter

- Started life as "ippserver" in the CUPS "test" directory

- Renamed to "ippeveprinter" for CUPS 2.3 with 3 modes:

  - Basic "legacy" mode emulating simple laser/inkjet printers from ippserver

  - PPD-based PostScript printer mode for supporting legacy PostScript printers

  - Attribute file mode for development and testing

- Uses CUPS backends to communicate with printers

- Manages a single printer, no background/daemon mode

ippeveprinter Enhancements

- Development continues in the IPP workgroup's ippsample and ippeveselfcert projects

  - https://github.com/istopwg/ippsample / https://github.com/istopwg/ippeveselfcert

  - Will be providing pull requests to Apple to incorporate these changes back into CUPS

- Enhancements:

  - Support for resource files (currently just a single strings file) for localizable attributes/values

  - Use system sounds for Identify-Printer (macOS only for now)

  - Support for Cancel-My-Jobs

  - Support for finishings-col attributes

- New "clone-printer" script that collects attributes, icon, and strings file from an IPP printer

LPrint

- Supports a variety of common label and receipt printers connected via network or USB

  - https://www.msweet.org/lprint

- Developed "on a dare"...

- Based loosely on the CUPS ippeveprinter source code

  - Multiple printer support via limited subset of IPP System Service

  - Background daemon (run on demand) handles all spooling and communication

  - Does not use CUPS backends

- Supports standalone operation/spooling without CUPS as well as running as an IPP Everywhere™ printer on the network that all CUPS clients can access

- Supports printing "raw", Apple/PWG Raster, and/or PNG files
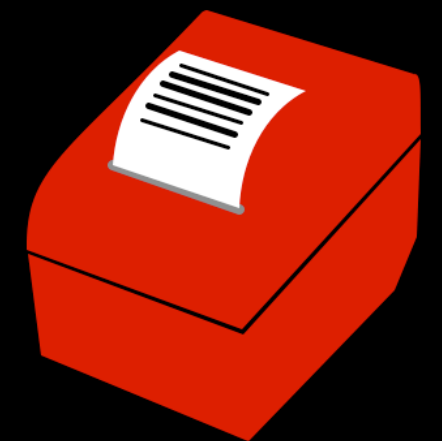
LPrint

PAPPL: Printer Application Framework

- Web site:

  - https://www.msweet.org/pappl

- A simple C-based framework/library for developing Printer Applications

  - Specifically developed to support the next major version of LPrint and a Gutenprint Printer Application

  - Sufficiently general purpose to support any kind of printer or driver that can be used on desktops, servers, and in embedded environments

- Supports JPEG, PNG, PWG Raster, Apple Raster, and "raw" printing to printers connected via USB and network (AppSocket/JetDirect) connections.

- Licensed under the Apache License Version 2.0 with an exception to allow linking against GPL2/LGPL2 software

PAPPL Demo

macOS®/iOS® Compatibility

- Printer Applications can support macOS and iOS clients fairly easily:
  - Support IPP Everywhere™
  - Support the Apple Raster format ("image/urf" MIME media type, handled by the CUPS raster API)
  - Advertise the "_universal" DNS-SD sub-type in addition to the "_print" sub-type
  - Implement the CUPS "marker-xxx" attributes so that macOS clients are able to show supply levels
  - Implement the "media-col-ready" and "media-ready" attributes so that iOS clients are able to select media

- *PAPPL handles all of this for the Printer Application...*

Q&A

Resources (1/2)

- ippeveprinter
    - https://istopwg.github.io/ippsample
    - https://github.com/istopwg/ippsample
    - https://github.com/istopwg/ippeveselfcert
    - https://github.com/apple/cups (original CUPS source)
- LPrint
    - https://www.msweet.org/lprint
    - https://github.com/michaelrsweet/lprint
- PAPPL
    - https://www.msweet.org/pappl
    - https://github.com/michaelrsweet/pappl

Resources (2/2)

- IPP Everywhere™ v1.0 specifications:

  - https://ftp.pwg.org/pub/pwg/candidates/cs-ippeve10-20130128-5100.14.pdf

  - https://ftp.pwg.org/pub/pwg/candidates/cs-ippeveselfcert10-20160219-5100.20.pdf

- IPP Everywhere™ v1.1 specifications (in PWG Call for Objections):

  - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeve11-20200417.pdf

  - https://ftp.pwg.org/pub/pwg/ipp/wd/wd-ippeveselfcert11-20200312.pdf

- IPP Everywhere™ printer self-certification tools:

  - https://istopwg.github.io/ippeveselfcert

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