CUPS

Michael R Sweet, Apple Inc.
April 7, 2011

Introduction

- CUPS is the standards-based, open source printing system developed by Apple Inc. for Mac OS® X and other UNIX®-like operating systems.
- CUPS 1.4.x is the current stable branch
  - Final 1.4.7 release coming out in a few months
- CUPS 1.5.x is the current development branch
  - Beta testing starting soon

Legal Stuff

- Still GPL2/LGPL2
- Still no plans to change to GPL3/LGPL3
- Name of the software and project is now officially just “CUPS”
  - Old logo and long name are going away
- New agreement for significant contributions:
  - http://www.cups.org/AppleContributorAgreement_2011-03-10.pdf
  - Summary: effectively joint copyright on contributions

CUPS 1.5 Changes

- Security
  - Job/printer/subscription access control
  - SSL certificate validation/revocation
  - Kerberos changes/simplification
  - Web interface configuration options
- Command-line programs
  - Help
  - Extended information
  - Additional feature parity between System V and Berkeley commands

CUPS 1.5 Changes

- Bonjour support
  - Goal is to add full support for Avahi
  - Have patches but not all contributors have signed new agreement
- IPP support
  - ipptool
  - IPP Everywhere

CUPS 1.5 Changes

- PWG Raster support
  - PWG Raster == subset of CUPS Raster v2 (compressed)
  - Simple changes for existing raster producers:
    - cupsRasterOpen(fd, CUPS_RASTER_WRITE_PWG)
    - Send full page image (no margins)
    - Look at FINAL_CONTENT_TYPE to determine whether to send CUPS Raster or PWG Raster
    - Add line to .convs file for “image/pwg-raster”, e.g.:
      - application/vnd.cups-postscript image/pwg-raster 100 pstoraster

CUPS 1.5 Changes

- PWG Raster support (con't)
  - New rastertopwg filter for existing CUPS Raster producers
  - imagetoraster filter will be updated with native PWG Raster support
  - Will be sending patches to Artifex for Ghostscript PWG Raster support in gdevcups

Not for CUPS 1.5

- PDF filters
  - Not all contributors have signed the new agreement
  - Still need to do a thorough code/design review
- Remote access to driver resources (ICC profiles, icons, etc.)
  - Need to define a bundling format and address security issues
- ICC support in imageto* filters
  - Out of time

CUPS API Changes

- ipp_t reference-counted starting with CUPS 1.4.4
  - Resolves a long-standing issue with collections
  - ippDelete only frees memory when the reference count goes to 0
  - Documentation has been updated

CUPS API Changes

- PPD header (<cups/ppd.h>) no longer included from main CUPS header (<cups/cups.h) starting with CUPS 1.5
  - Existing programs should include both headers, even for prior releases of CUPS

IPP Everywhere

- New standards work being done in the Printer Working Group
  - http://www.pwg.org/ipp
- The future of CUPS
  - Printers discovered using Bonjour, LDAP, or SLP, queried and printed to using IPP and PDF and/or bitmap files (JPEG or PWG/CUPS Raster)
  - Standard IPP job tickets - no PPDs

IPP Everywhere

- Existing network printers and direct-connect printers will continue to be supported using CUPS (PPD-based) drivers, with CUPS exposing these printers as “IPP Everywhere” printers
- Long-term goal is to eliminate the need for printer drivers, PPD files, and complicated printing/driver UI


CUPS
Future

CUPS Future

- Printing has changed a lot since 1999
- People are printing different things and printing less
- Mobile/wireless devices are prevalent
- Applications are a lot smarter
  - and so are printers!
- Need to address changing requirements, capabilities, and use cases

CUPS Future

- Major changes:
  - Tighter coupling between scheduler, filters, and printer
  - Focus on a few key file formats (JPEG, PDF, PWG Raster)
  - Focus on “smart” printers/services (i.e. IPP Everywhere, Cloud Imaging)
  - List of available printers is dynamic (not a static list)
  - Drop support for legacy technologies, formats, protocols, and features
  - Greater use of threading and launch-on-demand

CUPS Future

- Challenges:
  - Can we make these changes transparent to applications, i.e., will we be able to stay binary compatible?
  - Can we provide a consistent user experience on all platforms, i.e. do we have all of the tools/libraries we need for networking, USB, graphics, etc?
  - Can we make this scale from consumer electronics to high-end servers?
  - Can we do this quickly?
  - How do we coordinate with OSS that is not part of CUPS?

CUPS Future

- Timeframe/Schedule
  - No schedule yet
  - Will be planning after CUPS 1.5 is out

Resources

- CUPS web site:
  - http://www.cups.org/
- CUPS roadmap
  - http://www.cups.org/roadmap.php
- Printer Working Group web site:
  - http://www.pwg.org/
- IPP/IPP Everywhere home page:
  - http://www.pwg.org/ipp