OpenPrinting

CUPS Development
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Agenda

• Now: CUPS 2.4.x and Printer Applications
• Next: CUPS 2.5 and OAuth
• Future: CUPS 3.0 a.k.a. The Next Generation
CUPS 2.4.x (Stable)

- Release Manager: Zdenek Dohnal (Red Hat)
- Releases:
  - 2.4.0 - November 29, 2021
  - 2.4.1 - January 27, 2022
  - 2.4.2 - May 26, 2022
  - 2.4.3 - Soon
Printer Applications

- Replacement for CUPS printer drivers
- Look like IPP Everywhere™ printers
- Work with all versions of CUPS since 1.4
- Many now available:
  - ghostscript-printer-app: https://github.com/OpenPrinting/ghostscript-printer-app
  - gutenprint-printer-app: https://github.com/OpenPrinting/gutenprint-printer-app
  - hp-printer-app: https://github.com/michaelrsweet/hp-printer-app
  - hplip-printer-app: https://github.com/OpenPrinting/hplip-printer-app
  - LPrint: https://github.com/michaelrsweet/lprint
  - ps-printer-app: https://github.com/OpenPrinting/ps-printer-app
CUPS 2.5 (Development)

- Release Manager: Till Kamppeter
- Proposed Features:
  - [https://github.com/OpenPrinting/cups/milestone/6](https://github.com/OpenPrinting/cups/milestone/6)
  - OAuth 2/OpenID support (client and server)
  - Localization improvements
- Proposed Release Schedule:
  - 2.5b1 - March 2023
  - 2.5rc1 - April 2023
  - 2.5.0 - May 2023
  - 2.5.1 - July 2023
CUPS 2.5 + OAuth

• OAuth protocol work being done in the Printer Working Group:
  • https://www.pwg.org/ipp
• CUPS 2.4.x has the basics in place, but no default callback or UI
• Need:
  • Default OAuth callback and UI
  • Add support for Bearer auth method in cupsd
• Need to enlist desktop developer(s) for OAuth UI
  • Create separate project as needed for UI and D-Bus service that libcups can talk to?
  • Important to coordinate X.509/OAuth functionality with 3.0 development to minimize differences and provide a clear migration path
CUPS 3.0 (The Next Generation)

• Release Manager: Michael Sweet

• Major goals:
  • Move away from PPD files, just use IPP Everywhere™ attributes and values
  • Split local printing (simple spooling/transform support) from network sharing (complex spooling/transform/accounting support)
  • Sub-projects for logical components that can be maintained and developed separately

• Proposed Release Schedule:
  • libcups 3.0b1 - October 2022
  • cups-* 3.0b1 - September 2023
CUPS 3.0 Architecture

User-Level

CUPS Commands

CUPS Local Server

System-Level

CUPS Sharing Server

Printer Applications

CUPS Library (libcups)
CUPS 3.0 Library (libcups)

• Repository (mostly complete, stable):
  • https://github.com/OpenPrinting/libcups

• Changes:
  • Deprecated APIs in CUPS 2.x have been removed
  • Some functions and types have been renamed
  • Now use bool and size_t types where appropriate
  • Added/promoted portable DNS-SD, IPP data file, and threading APIs
  • "MIGRATING.md" and CUPS programming manual provide details
  • Still need to add/promote D-Bus interface and localization APIs, and finish ipptool bug fixes and enhancements
CUPS 3.0 Commands

• Repository (pre-beta):
  • [https://github.com/OpenPrinting/cups-commands](https://github.com/OpenPrinting/cups-commands)

• Changes (so far):
  • lpadmin changed for post-PPD world
  • lpinfo removed
CUPS 3.0 Local Server

• Repository (pre-beta):
  • https://github.com/OpenPrinting/cups-local

• Progress:
  • Build system and baseline server code committed
CUPS 3.0 Architecture

- Handles all discovery and communications with printers
- Handles authentication, authorization, consent, and notification UI
- Converts to/from PDF/raster as needed for printers
- Job history is limited to the current session/login
- No web interface
- Configuration limited to listing specific printers or servers that cannot be discovered via DNS-SD ("profiles")

(Socket API == IPP)
CUPS 3.0 Sharing Server

• Repository (pre-beta):
  • https://github.com/OpenPrinting/cups-sharing

• Progress:
  • Build system and baseline server code committed
CUPS 3.0 Architecture

• Handles all communications with printers
• Authorization/consent/notification UI needs to be handled by client
• Converts to/from PDF/raster as needed for printers
• Push (to printer) and pull/release (from printer/proxy)
• Job history is configurable with accounting interface
• Web interface
• Configuration similar to existing cupsd
• OAuth token introspection (RFC 7662) and scopes for ACLs

(Socket API == IPP)
CUPS 3.0 Planning

• User interfaces:
  • Print dialog
  • Authentication
  • Consent for accounting/privacy

• Command-line authentication and "API key" support

• Print profiles (alternative to DNS-SD/mDNS for printer discovery)

• Printing:
  • IPP Everywhere™/AirPrint™/Mopria® (PDF/Raster)
  • Windows/SMB (PostScript/PCL)
  • Print to file (PDF)
CUPS 3.0 Planning (con't)

- Transforms:
  - PDFio provides necessary PDF support
  - Still need to finalize raster support
    - Poppler/Xpdf on Linux, CoreGraphics on macOS
    - Would be nice to standardize on a common graphics library with a suitable license/build system for rendering PDF content
Open Printing

Open Discussion