

CUPS Update

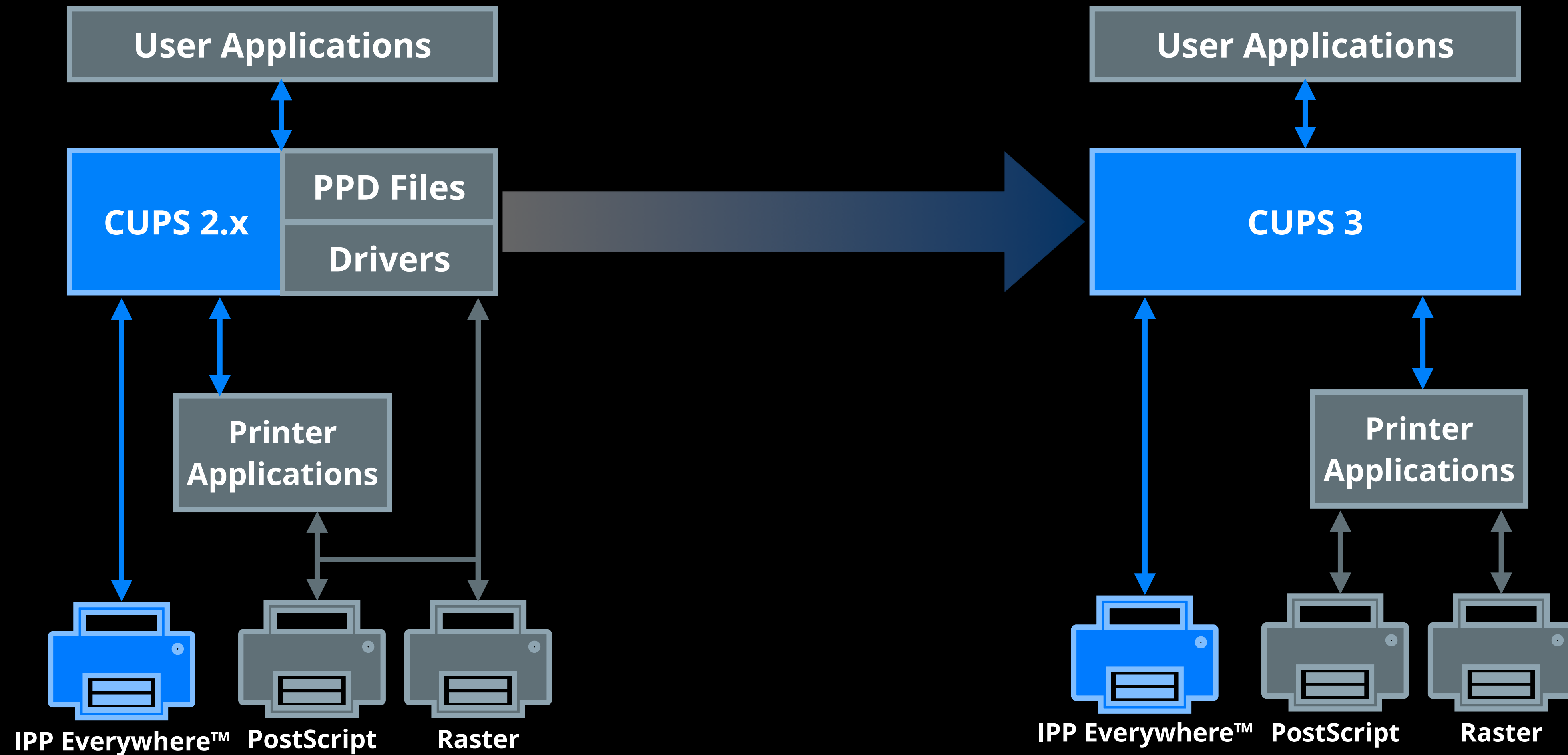
August 2024

Michael R Sweet (Lakeside Robotics)

Topics

- Transition of Printing
- CUPS 2.4.x
- CUPS 2.5
- CUPS 3

Transition of Printing



CUPS 2.4 - Overview

- Release manager: Zdenek Dohnal
- Release history:
 - CUPS 2.4.0 - November 29, 2021
 - CUPS 2.4.1 - January 27, 2022
 - CUPS 2.4.2 - May 26, 2022
 - CUPS 2.4.3 - June 1, 2023
 - CUPS 2.4.4 - June 6, 2023
 - CUPS 2.4.5 - June 13, 2023
 - CUPS 2.4.6 - June 22, 2023
 - CUPS 2.4.7 - September 20, 2023
 - CUPS 2.4.8 - April 26, 2024
 - CUPS 2.4.9 - June 11, 2024
 - CUPS 2.4.10 - June 18, 2024
- Current Github "2.4.x" branch:
 - Will continue patch updates as needed until 2.5.0 is out

CUPS 2.5 - Overview

- Release manager: Till Kamppeter
- Release schedule:
 - CUPS 2.5b1 - Soon?
 - CUPS 2.5rc1 - January/February 2025?
 - CUPS 2.5.0 - February/March 2025?
- Current Github "master" branch:
 - <https://github.com/OpenPrinting/cups/milestone/6>

CUPS 2.5 - Changes

- New build requirements:
 - C99, DNS-SD (Avahi or mDNSResponder), TLS (GNU TLS, LibreSSL, or OpenSSL), ZLIB, POSIX or Windows threading
- Features:
 - Discovery improvements: "wide-area" DNS-SD lookups and configuration profiles
 - Localization improvements: multiple languages in IPP Everywhere PPDs, centralize localization efforts
 - OAuth 2.0/OpenID authentication/authorization
 - "job-sheets-col" support (banner pages on specific media using standard formats)

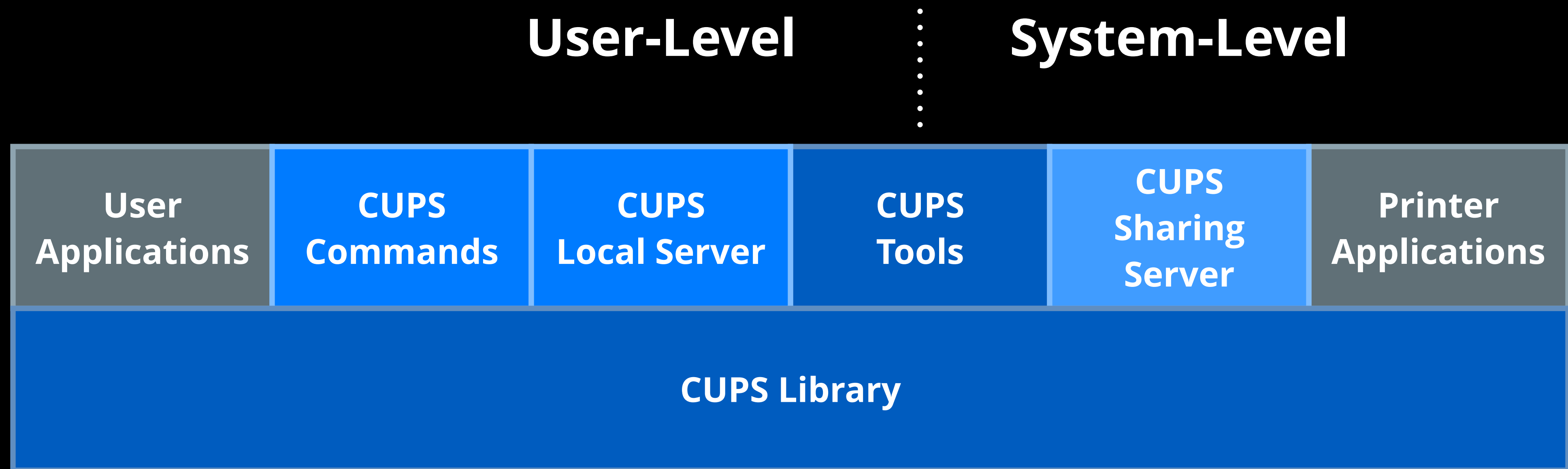
CUPS 3.0 - Overview

- Release manager: Michael Sweet
- Release schedule:
 - libcups 3.0rc1 + cups-local 3.0b1 - September/October 2024
 - cups-sharing 3.0b1 - March/April 2025
- Current Github "master" branches:
 - <https://github.com/OpenPrinting/libcups>
 - <https://github.com/OpenPrinting/cups-local>
 - <https://github.com/OpenPrinting/cups-sharing>

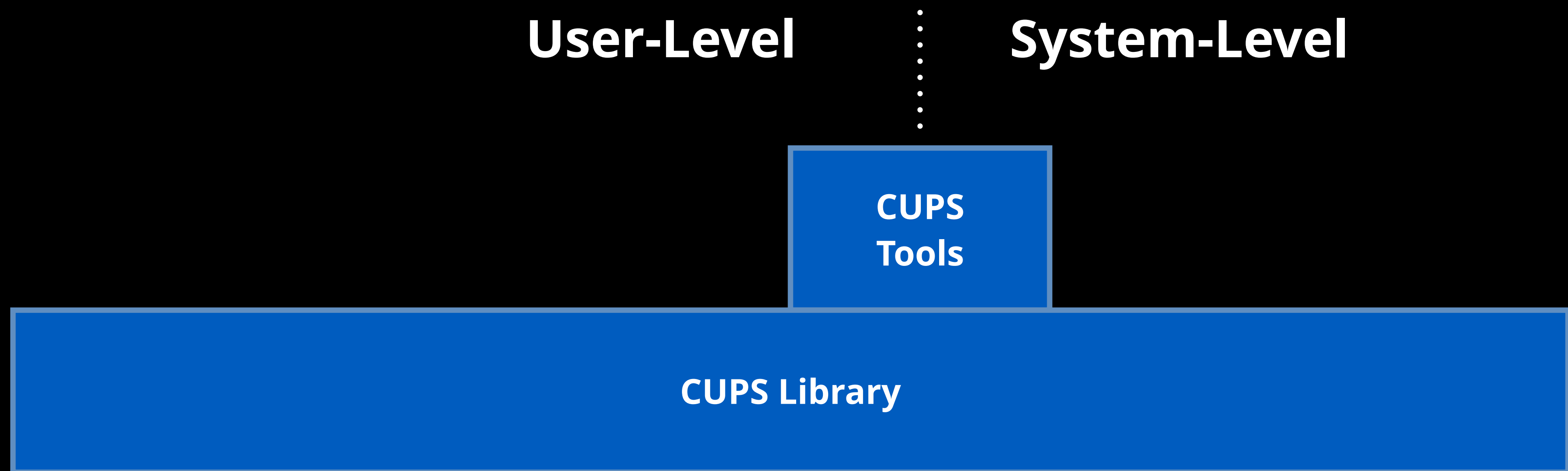
CUPS 3.0 - Changes

- New modular architecture
 - Common library/tools (libcups)
 - Local printing (cups-local)
 - Shared printing (cups-sharing)
- "Native" IPP implementation
 - Printer applications to support legacy printers
- Removal of deprecated APIs/features
 - Printer drivers/PPDs
 - Kerberos
- General cleanup

CUPS 3.0 - Architecture



CUPS 3.0 - libcups



CUPS 3.0 - libcups

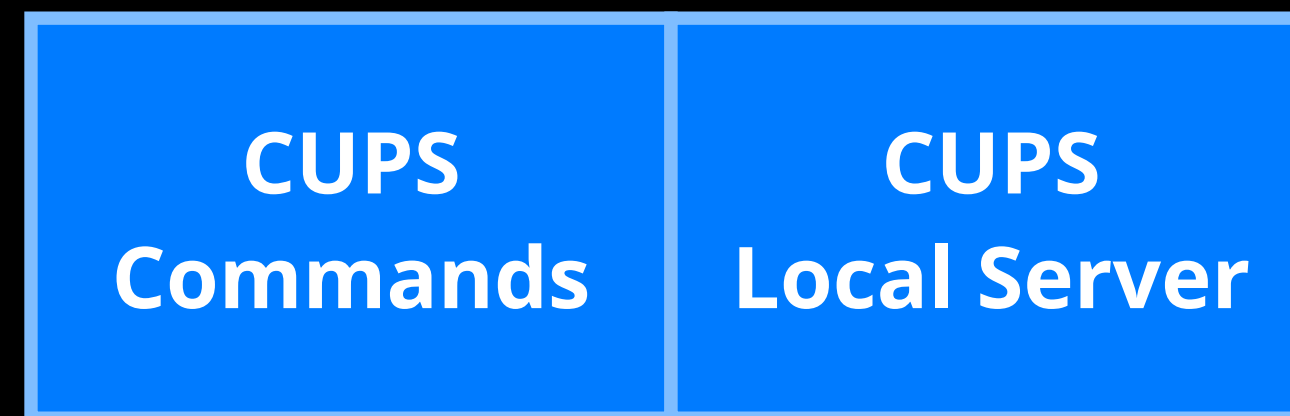
- Repository:
 - <https://github.com/OpenPrinting/libcups>
- Commands:
 - ippevepcl, ippeveprinter, ippeveps, ippfind, ipptool, ipptransform (pending)
- Library:
 - Added new APIs (also in CUPS 2.5):
 - IPP test file, HTML form, JSON, JWT, OAuth/OpenID, and X.509 APIs
 - Removed all deprecated APIs
 - Naming and calling conventions have been normalized - see "MIGRATING.md" document
 - New shared library major version - not binary compatible with CUPS 2.x and earlier
- Status: Nearly stable

CUPS 3.0 - cups-local

User-Level



System-Level

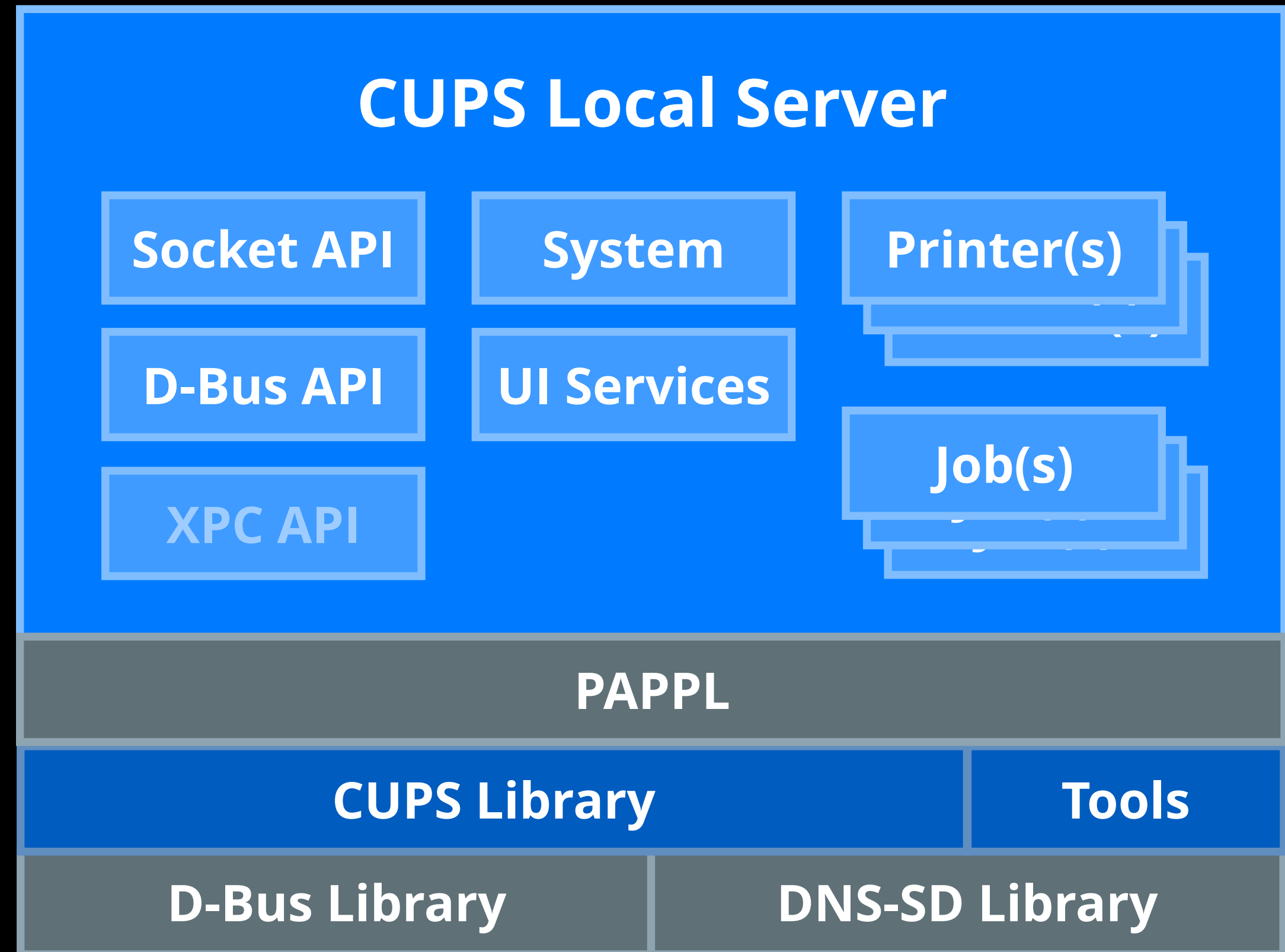


CUPS 3.0 - cups-local

- Repository:
 - <https://github.com/OpenPrinting/cups-local>
- Commands:
 - cancel, lp, lpq, lpr, lpstat
 - cupsaccept, cupsdisable, cupsenable, cupsreject, lpadmin
- Local Server (cupslocald):
 - Handles local print requests for desktop/mobile devices
 - Only temporary IPP Everywhere print queues
 - Runs as user
 - UNIX domain socket w/D-Bus API for "discovery"
- Status: Mostly complete, needs testing

CUPS 3.0 - cups-locald

- 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")



CUPS 3.0 - cups-sharing

User-Level



System-Level

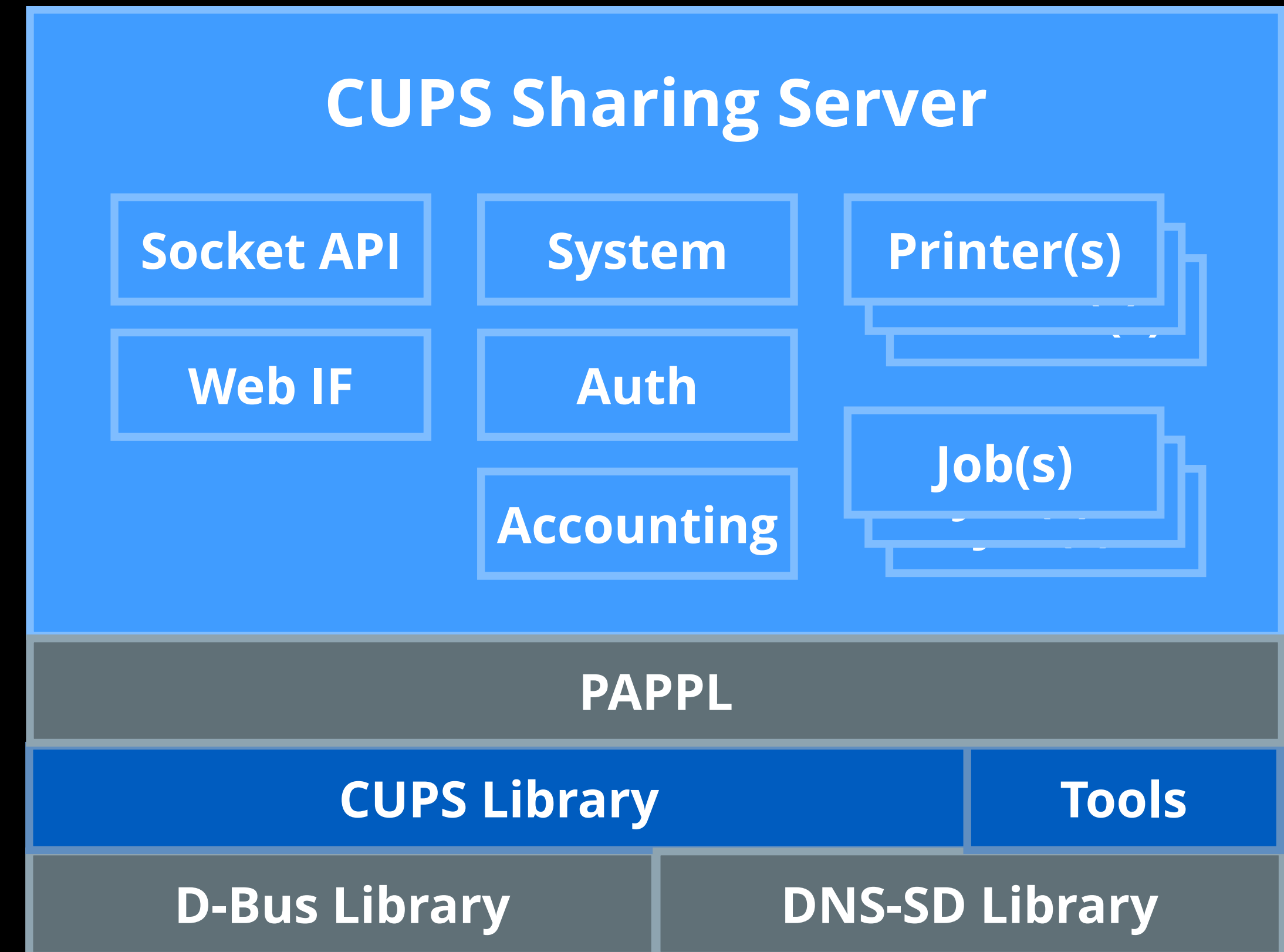
CUPS
Sharing
Server

CUPS 3.0 - cups-sharing

- Repository:
 - <https://github.com/OpenPrinting/cups-sharing>
- Sharing Server (cupssharingd):
 - Handles network print requests and local printing on headless servers
 - Full print accounting/ACLs/pre-processing of documents
 - OAuth 2 and PAM-based authentication/authorization
 - IPP Shared Infrastructure Extensions/System support
- Status: Barely started

CUPS 3.0 - cupsssharngd

- Handles all communications with printers
- Authorization/consent/notification UI needs to be handled by client
- Converts to/from PDF/raster as needed for printers
- Job history is configurable
- Web interface
- Configuration similar to existing cupsd
- OAuth token introspection (RFC 7662) or JWT inspection and scopes for ACLs



CUPS 3.0 - Challenges

- Much broader scope and integration than the original CUPS work
- Desktop support - need to uplift GNOME/KDE/XFCE desktops to new D-Bus API for printing, authorization, consent UI
- Need developers to work on the local and sharing servers, desktop UI/services
 - Using PAPPL for the core server bits
 - Much of the print dialog work can be repurposed
 - Probably have existing authorization/notification UI we can use
- Graphics libraries - current PDF tools/libraries have problematic licenses or other limitations

Lakeside



Robotics