

ChromiumOS Printing Update

Printer Working Group F2F May 2021

Agenda

- Review of ChromiumOS
- Projects Used in Printing
- Features in Chromium
- New Projects
- Scanning

What is ChromiumOS?

- Gentoo Derivative
 - Everything is built from source
- Supports a variety of ARM and amd64 architectures
- Open Source
 - <https://chromium.googlesource.com/chromiumos/overlays/chromiumos-overlays/+refs/heads/main/net-print/>

Open Source Projects Used

- CUPS
 - Print spooling
 - Driverless support
- cups-filters
 - gstoraster
 - pdftops
 - foomatic-rip
- Ghostscript
- Scanning
 - sane-airscan
 - SANE
- avahi + nss-mdns
 - mDNS hostname resolution

Features in Chromium

- mDNS detection
- Driverless support
- Matching printers with PPDs

Recent Improvements

- Expanded lpadmin errors
 - Improved reporting of Driverless setup failures
- Expanded testing through automation
 - Testing of the filter pipeline
 - More validation of individual filters

New Projects

foomatic_shell

- Written by Google
- Replaces Bash for as used by foomatic-rip
- Validates shell commands
- Validates Ghostscript flags
- Implements Bash-isms common in Foomatic PPDs

https://chromium.googlesource.com/chromiumos/platform2/+master/foomatic_shell

virtual-usb-printer

- Software emulation of an IPP-over-USB printer
- IPP Responses configured via JSON
- Working on enhancements to simulate printer quirks

https://chromium.googlesource.com/chromiumos/third_party/virtual-usb-printer/

ippusb_bridge & udev

- Handles HTTP requests and converts them to USB BULK OUT
- Manages USB connections
- Differences from <https://github.com/OpenPrinting/ipp-usb>
 - Implemented in Rust
 - Smaller exe size on disk
 - Doesn't advertise devices on network
 - Listens on local unix sockets
 - Releases USB interfaces between connections to allow sharing
 - Needs one copy per device

https://chromium.googlesource.com/chromiumos/platform2/+/-/master/ippusb_bridge

Scanning

Architecture

- Backend based on SANE
- Middle layer that loads libsane in a sandbox and translates Chrome <-> SANE API
 - <https://chromium.googlesource.com/chromiumos/platform2/+HEAD/lorgnette/>
- Frontend written and open sourced in Chromium
 - <https://source.chromium.org/chromium/chromium/src/+main:chrome/browser/ash/scanning/>

- Primarily concentrating on eSCL through sane-airscan
- Shares ippusb_bridge with printing to scan over USB

Scanning Questions

- No standard for responding to scans initiated on the scanner
- eSCL can produce JPG directly, but we have to roundtrip through SANE frame formats



Thank you!

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