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-overlay/+/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
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/](https://chromium.googlesource.com/chromiumos/platform2/+/HEAD/lorgnette/)
- Frontend written and open sourced in Chromium

- 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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