Open Printing Project Updates - 2020

PWG F2F
Aug 18, 2020

Aveek Basu - Program Manager
Open Printing

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- **Linux GUI application (can be part of GNOME printer tool) to admin MF devices using IPP System Service:**
  The student's task will be to create an appropriate printer configuration interface for system-config-printer or for the GNOME Control Center.

- **Common Print Dialog Backends (CPDB) Qt implementation:**
  The Qt Print Support framework should be updated with the CPD support. The goal is to provide the CPD GUI features and d-bus communications with the CPD backend support for printing from Qt5 applications on support platforms.

- **IPP scan (or virtual MF device) server (Scanner Application):**
  This task is about adding the scan server functionality. If you have a scanner connected locally (and it scans via SANE), share it as an IPP scanner, advertising itself and accepting jobs using the IPP driverless scanning standard.

- **General Printer Application SDK:**
  Goal is to get a universal Printer Application SDK (Software Development Kit) to not only convert classic drivers but also to create new printer drivers, from scratch, without PPD files.

- **Make Printer Applications configurable:**
  The student's task is to create libraries, utilities, contribute to the Printer Application framework to get configurability in the Printer Applications. One could perhaps have two students, one for IPP System Service and one for a web interface..

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- **Speed/scaling optimization of cups-browsed:**
  In this project the student should analyse the performance of cups-browsed with many remote printers and optimize it, using things like multi-threading for example.

- **Extract raster data from PDFs for direct printing:**
  The student's task here is to find out about suitable raster-only PDF types (at least PCLm should be supported, the more file types, the better), make these files get identified, and write a CUPS filter which extracts the raster data and passes it on as CUPS Raster. The resulting code will get added to the cups-filters project.

  Check here for more details..

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- **Wrapping proprietary printer drivers into a Printer Application Support for IPP Fax Out:**
  With sandboxed packaging, Linux distributions appear which do not use classic RPM or DEB packages any more, like the all-Snap Ubuntu Core. As a result CUPS will not work with classic PPD/filter-based printer drivers any more but requires all drivers being provided as Printer Applications. The student's task is to add this functionality to the Printer Application framework and create an easy way for users to install proprietary printer drivers into that chroot-equipped Printer Application. IPP Fax out is a feature which is currently missing in Linux unlike Print and Scan. The student's task here is to make this functionality easily accessible for users of common desktop Linux distributions. Like printers, faxes should automatically appear on the system and get available in print dialogs and if one prints to a fax, fax-specific options should also appear in the print dialog and the user should be able to pick phone numbers also from contacts. **Check here for more details..**

- **Open Printing: IPP scan (or virtual MF device) server (Scanner Application):**
  This task is about adding the scan server functionality. If you have a scanner connected locally (and it scans via SANE), share it as an IPP scanner, advertising itself and accepting jobs using the IPP driverless scanning standard. **Check here for more details..**

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Students

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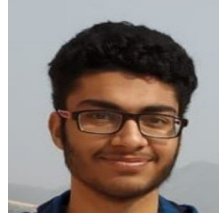# GSoC / GSoD / LFMP 2020 Students

Lakshay Bandlish
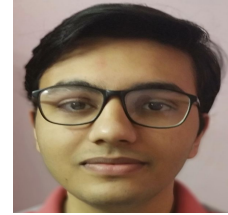
Linux GUI application (GSoC)

Sambhav Dusad

Make Printer Applications Configurable (GSoC)

Jai Luthra

General Printer Application SDK (GSoC)

Mohit Mohan

Optimisation of cups-browsed (GSoC)

Vikrant Malik

Extract raster data from PDF (GSoC)

Priydarshi Singh

Common Print Dialog Backend (GSoC)

Nidhi Jain

Support for IPP Fax Out (LFMP)

Dipanshu Verma

Wrapping proprietary printer drivers into a
Printer App (LFMP)

Piyush Goyal

Tutorial and Design Guidelines for
Printer App (GSoD)

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GSoC 2020 Mentors & Admins

- **Till Kamppeter**

- **Michael Sweet**

- **Ira McDonald**

- **Smith Kennedy**

- **Danny Brennan**

- **Zdenek Dohnal**

- **Alexander Pevzner**

- **Thierry Ordissimo**

- **Dongxu Li**

- **Sahil Arora**

- **Deepak Patankar**

- **Rithvik Patibandla**

- **Nilanjana Lodh**

- **Dheeraj Yadav**

- **Admins:**
  Till Kamppeter
  Aveek Basu

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Linux GUI app to admin MF devices using IPP System Service

Lakshay Bandlish
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- **Current Way of Managing Printers (Web Interfaces):**
  No need to install any software
  Operating System Independence
  Manufacturer-Dependent Web interfaces
  No special support for MF devices

- **What Are We trying To Achieve:**
  A universal GTK-based Printer Management Tool
  Discovery of IPP System Services
  Interface to manage MF-devices

- **Demo:**
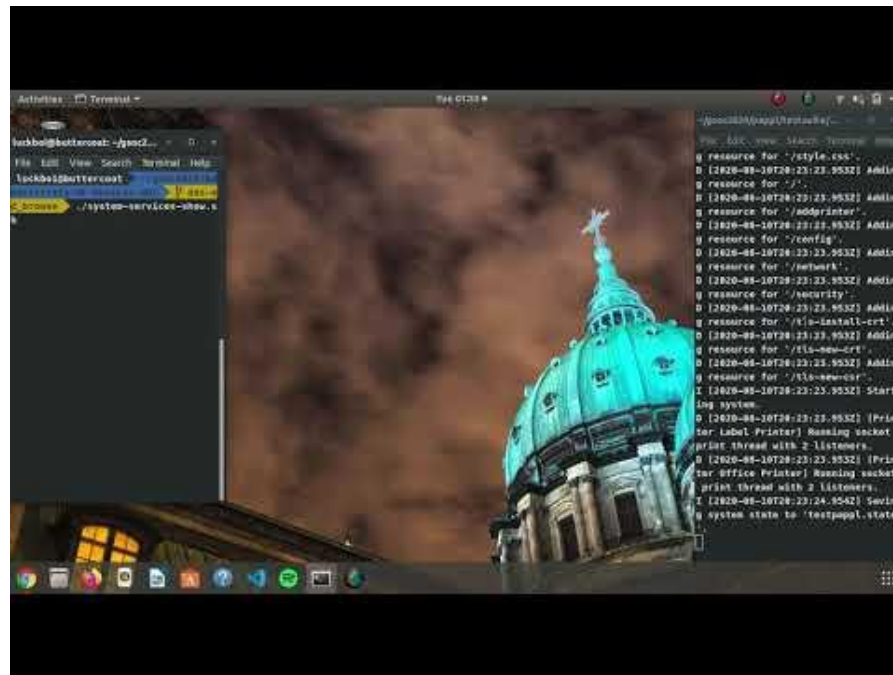
(This video is from an older version of the program) Code is available at:

https://github.com/lbandlish/Administrate-MF-Devices-GUI

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Speed optimisations for cups-browsed

Mohit Mohan
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- **About the Problem and the solution:**

  Cups-browsed provides great features to its users, but the area where it lacks is that it takes a large amount of time to create queues for all the printers available on a network. This is an important thing from a users perspective.

  To address this issues we have decided that multi-threading should be a solution to this problem. There are some parts of the code that can be parallelised so as to decrease the time taken to create queues. The parts parallelised will be:

  resolve_callback() (which receives the data received from avahi and processes the discovery)
  update_cups_queues() (it considers the current state of the printers and decides how to proceed with it and it creates the queues for the printers).

  More implementation specific details can be found at this link.

- **Current Status of The Project:**

  Parallelised the resolve_callback() part which processes the discovered entry.
  Working on parallelising queue creation from update_cups_queues(). If a printer has queue to be created, we will create a new thread to process its queue creation separately

  The current state of the project can be accessed here and the testing results can be found at this link.

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GSoC 2020 Project - Making Printer Applications Configurable

Sambhav Dusad
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- **The project aim was to make PAPPL more configurable by adding utilities and improving the web interface.**

- **Issues Worked On:**
  Job save and pending job-files support
  Adding Print-Test Page functionality
  Log Rotation support and setting log-level
  Creation/Deletion of printer from web-interface
  Pager Support and Cancel job(s) buttons to web-interface

- **Demo:** gsoc-project-demo.mp4

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Common Print Dialog Backends (CPDB) Qt implementation

Priydarshi Singh
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- **Project Status:**

  The dialog box is complete: it can take user's options and print according to those options.

  There are some minor things left: like dealing with unused options, checking build issues when cpdb-libs is not installed, adding documentation to the code, and making it strictly follow the Qt Coding style.

  We also need to make a PR to merge it into the official Qt codebase.

Demo: https://youtu.be/fLMcjqbM7Bk

Code: https://github.com/dryairship/qtbase/tree/cpdb
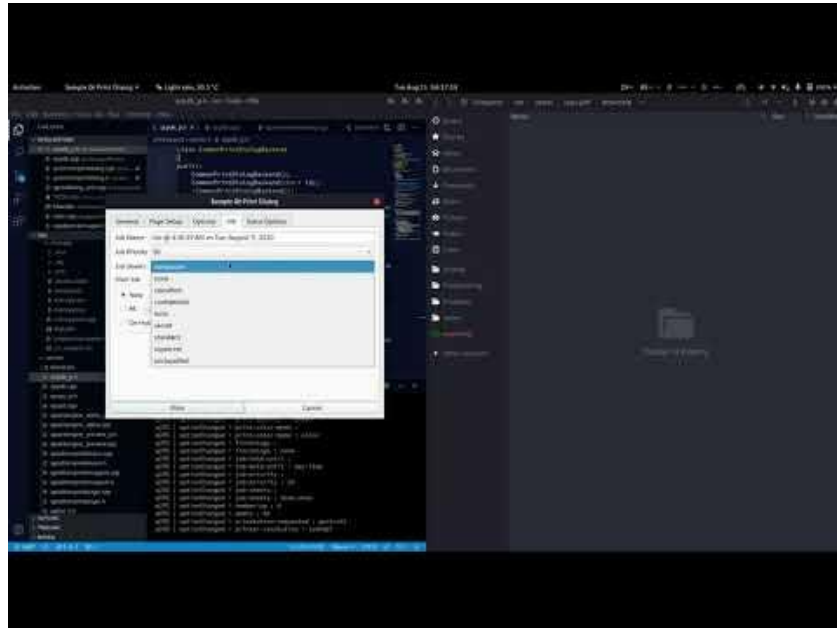
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General Printer Application SDK

Jai Luthra
luthrajaiji@gmail.com

- **Tasks accomplished:**

    Device Discovery - Via DNS-SD and SNMP.

    A Standard Main Loop - For printer application with application-specific arguments.

    PCL Printer Application - A working example of how to create native printer applications using PAPPL.

    Device Auto-Setup(in progress) - Automatically detect nearby devices and add them to the system if the printer application can support them.

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Extract raster data from PDFs for direct printing

Vikrant Malik

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- **Tasks accomplished:**

  The main goal of my project was to build a filter which could extract raster data from raster-only pdf files and PCLm files, so that we don't have to pass them through poppler or other

  APIs to rasterize them.

  The pclmtoraster filter has been tested and added to the cups-filters project and is ready to use.

  The newly added pclmtoraster filter can extract raster data from the following categories of files:

  1. All PCLm files 2. PDF files with 1 bitmap per page (Colorspace supported: DeviceRGB, DeviceCMYK, DeviceGray, with 8 bits-per-component)

Code Repository:

https://github.com/V1krant/cups-filters

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Thank You !!

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