

linuxprinting.org and Foomatic

The Current Standard for Printer Driver Integration and Capabilities Handling

Till Kamppeper, MandrakeSoft, France
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Summary

- What is Foomatic?
- How did Foomatic emerge?
- How does Foomatic work?
- What is planned for the future?

What is Foomatic?

- Foomatic: Universal Printing Infrastructure
 - *Database* about how printers are supported by free software
 - *Most complete database*: Lists all free drivers and around 1000 printers.
 - Contains also information of *how the drivers are executed* (Command line, options)
 - Easy setup of printers under all spoolers

What is Foomatic

- *PPD file generator* for all free printing systems (CUPS, PPR, PDQ, LPD, GNUlpr, LPRng, CPS, no spooler)
- User has access to *all the driver's options* when printing
- *Scripts* for administration/printing with the *same interface* for all spoolers
- *Inofficial standard* used by Mandrake, Conectiva, Red Hat, SuSE, Debian, KDE Print, ...

How did Foomatic emerge?

- Foomatic: A Short History
 - Started 1998 by Grant Taylor, author of the Printing HOWTO
 - *CUPS-O-Matic* In early 2000, shortly after first CUPS release, later *PDQ-O-Matic*
 - In August 2000 I started at MandrakeSoft to switch *Mandrake 7.2* to *CUPS* as the first distro.
 - To not loose printer support in *Mandrake 7.2*, I entered the execution details of all drivers.
 - Since August 2001 I am project leader.

How does Foomatic work?

- *XML-Database* consisting of entries for
 - *Printers*: Contains make, model, comments, support quality, ...
 - *Drivers*: Contains name, type, command line prototype, list of supported printers, ...
 - *Options*: Contains name, type, possible settings, for what printers/drivers, what to insert into command line/print job
- From this is derived which drivers with which options support a printer

How does Foomatic work?

Printers

Printer:

HP LaserJet 4

PCL5, 600 dpi max., laser

ljet4: Resolution 600 dpi, Copies
gimp-print: Resolution 600 dpi,
Copies

Printer:

HP LaserJet 2100

PCL5, PCL6, 1200 dpi max., laser

ljet4: Resolution 600 dpi, Copies
gimp-print: Resolution 600 dpi,
Copies
pxlmono: Resolution 600/1200 dpi,
Copies

Printer:

Epson EPL-5900

PCL5, PCL6, 1200 dpi max., laser

ljet4: Resolution 600 dpi
gimp-print: Resolution 600 dpi
pxlmono: Resolution 600/1200 dpi

Printer:

Epson Stylus C80

ESC/P 2, 2880x1440 dpi max., inkjet

gimp-print: Resolution 720 dpi

Drivers

Driver: ljet4

PCL5, 600 dpi max.

Printers:

HP LaserJet 4
HP LaserJet 2100
Epson EPL-5900
...

Driver: pxlmono

PCL6, 1200 dpi max.

Printers:

HP LaserJet 2100
Epson EPL-5900
...

Driver: gimp-print

Various lang. & resolutions

Printers:

HP LaserJet 4
HP LaserJet 2100
Epson EPL-5900
Epson Stylus C80
...

Options

Option: Resolution

Drivers:

ljet4, pxlmono, gimp-print

Values:

- **600 dpi**
(ljet4, pxlmono,
gimp-print *only with*
HP LaserJet 4, 2100,
Epson EPL-5900)

- **1200 dpi**
(pxlmono)

- **720 dpi**
(Epson Stylus C80)
...

Option: Copies (PJM)

Printers:

HP LaserJet 4, 2100

Values: Numbers 1-999



How does Foomatic work?

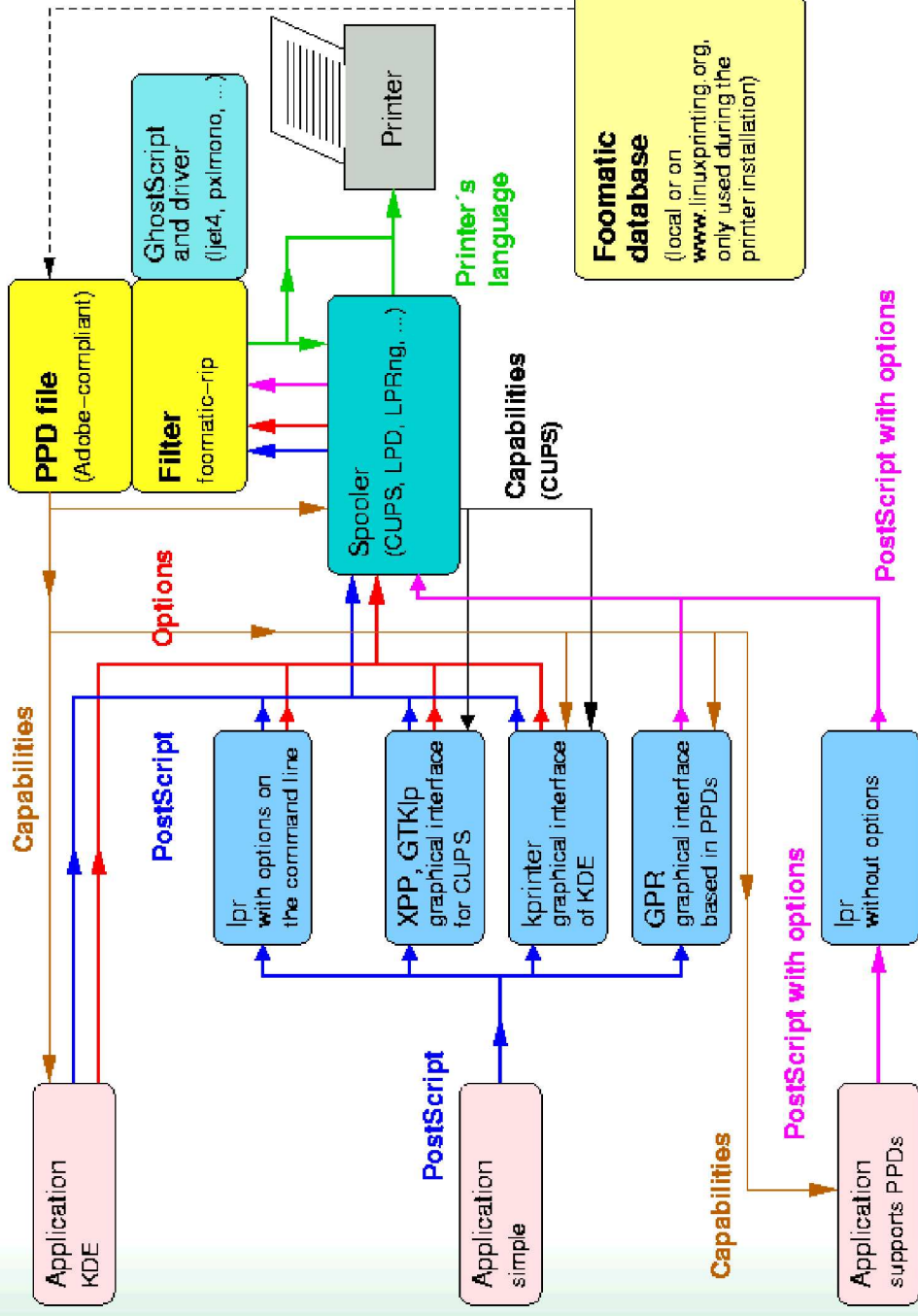
- This data forms the *pages of linuxprinting.org*
- The same data is used to generate *PPD files*:
 - The user chooses *printer and driver*
 - An Adobe-compliant *PPD file* for the printer/driver combo is made
 - The user sets up a *print queue* with this file and the *universal Foomatic filter “foomatic-rip”*

How does Foomatic work?

- Foomatic filter
 - “**fomatic-rip**” filter converts *PostScript* to the printer's *native language*.
 - Filter is *Perl* script, reads *printer capabilities* from PPD file without libraries
 - Filter receives *user's settings* via spooler or embedded in the job's *PostScript*
 - Filter sets up *GhostScript command line* from info of the config file and the user
 - Also inserts settings in job (PS, PjL)

How does Foomatic work?

Data Flow when Printing with Foomatic



How does Foomatic work?

- Interaction with applications/frontends
 - Applications produce *PostScript* to print
 - Options can be set on the *command line*: “`lpr -P lj -o Resolution=1200 file.ps`”
 - KDE Applications use GUI “*kprinter*” which gets capability info from *Foomatic PPD* or *CUPS*
 - Other *GUIs*: XPP, GTKlp (CUPS), GPR (PPD)
 - The PPD files are also used for PPD-aware apps (as OpenOffice.org) or Windows/Mac clients.

How does Foomatic work?

- Same interface for administration/usage of every spooler
 - **foomatic-configure**
 - Administration of *print queues* (add, modify, copy, ...)
 - Adding queues with one command line under any spooler
 - **foomatic-print job**
 - Tool for *printing* and *managing jobs*
 - Unifies functionality of “**lpr**”, “**lpq**”, “**lprm**”, “**lpc**” also for spoolers without such commands

What is planned for the future?

- **Printer/driver classes**
 - Classes contain printers or drivers with common features (as all A3 printers, all PCL5, ...)
 - Option/choice constraints can specify classes
 - Class XML files contain common info as printer language, comment text snippets, ...
- **Option conflict handling (as duplex on transparencies)**
- **PickMany, String and Password option types**

What is planned for the future?

- “pstoedit” driver entry for HP-GL/2 plotters
- Links to PPD/UPDF files in database, hosting these files on linuxprinting.org
 - Free HP and Kyocera PPDs already available.
- Automatic Foomatic data generation for UPDF files with Omni
- GUI for Foomatic tools
- Printer auto-detection
- Auto-config of OpenOffice.org, GIMP, ...

Final words

Foomatic ...

- ... is the most complete printer/driver compatibility database
- ... generates Adobe-compliant PPD files
- ... has a universal filter for all spoolers
- ... provides tools for printer administration and printing for all free spoolers

So Foomatic is already one of the best solutions for printer/driver/spooler integration, but ...

Final words

- Currently, 90 % of the work on Foomatic is done by me
- More developers needed to implement important, but still missing features
- Database must be kept up-to-date with new printer models
- Publishing of PPDs/UPDFs as free software by printer manufacturers needed, to add these files to linuxprinting.org