TNE30019/TNE80014 – Unix for Telecommunications

CUPS – Configuring Printers and Printing from Unix

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Outline

- Configuring CUPS
- Adding printers
- Understanding CUPS processing
  - Filters
  - Backends
  - Processing chain
- Configuring Unix client

CUPS – Server Configuration

`/usr/local/etc/cups/cupsd.conf`

- Also `/usr/local/etc/cups/classes.conf`
- Files well documented

Useful fields to change

- `Listen` – IP address to open a socket on
- `WebInterface` – Provide web access to print queue and management
- `<Location>` – Configures HTTP access (like Apache)

-
  ```
  Order Deny, Allow
  Deny From All
  Allow From 127.0.0.1
  Allow From ...
  ```
- Usually restrict access to `<Location> /admin`

CUPS – Auto Starting

`/etc/rc.conf`

```
cupsd_enable=‘‘YES’’
```

Starting and stopping

- Automatically started at boot time *OR* `/usr/local/etc/rc.d/cupsd start|stop`
- Port **631** open on server for browsing
- Connections accepted from allowed hosts
- Server running – now need to add/configure printers

CUPS – Configuring Printers

/usr/local/etc/cups/printers.conf

- Defines printers
- One section **MUST** be `DefaultPrinter`
- Do not edit, file is maintained by **cupsd**
- Create/configure/delete printers via IPP Protocol **and** CUPS web interface

PostScript Printer Definition (PPD) Files

- Describe capabilities of PostScript printers
- CUPS extended PPDs to handle non-PostScript printers
- Allows user to choose options – page size, duplex, etc.
- For each **printer_name**, need corresponding `/usr/local/etc/cups/ppd/printer_name.ppd`
  - PostScript printer – provided by manufacturer
  - Other printers – available via CUPS website

CUPS – Modules

Filters

- Convert between document formats
- `/usr/local/libexec/cups/filter`

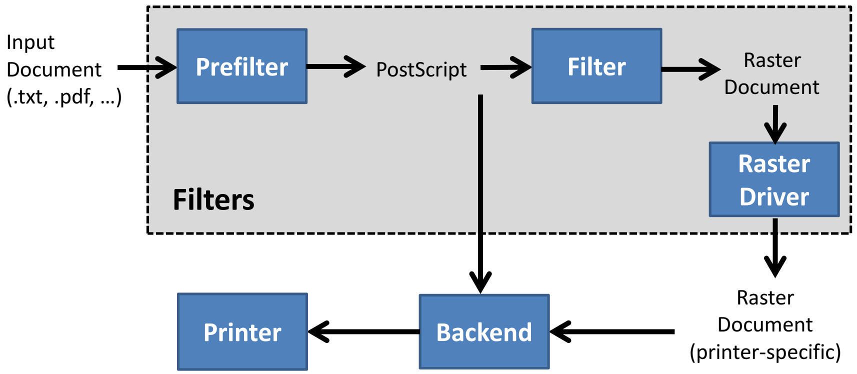
Backends

- Take final format and deliver to printer
- `/usr/local/libexec/cups/backend`

Filters and Backends

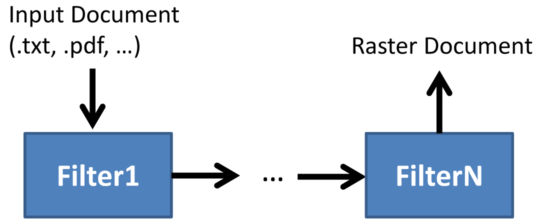
- Lots pre-installed
- Can develop our own (see CUPS documentation)
- Executables
- Strict specifications for parameters to scripts/binaries

CUPS – Server Printing Process



CUPS – Need Pipeline of Filters

- N input formats and M output formats requires $N \cdot M$ filters?
- Not scalable, so use multiple filters to convert from input to output (filter pipeline)



CUPS – Printing / Creating Filter Pipeline

IPP Protocol

- Jobs sent as HTTP POST requests (MIME application/ipp)

Acceptable input formats

- MIME type defines if CUPS will print it
- Rules in `/usr/local/etc/cups/mime.types`

Converting to format for chosen printer

- Rules in `/usr/local/etc/cups/mime.convs`
- Each line specifies
  `input_mime output_mime cost filter`
- CUPS determines filter chain of minimum cost

New Filters

- Need to (maybe) add new MIME type rules to `mime.types`
- Need to add filter chain rules to `mime.convs`

CUPS – Printing from Unix Client

/usr/local/etc/cups/client.conf

```
ServerName http://print.server:631
```

- Applications that use CUPS will now print to this server instead of **localhost**
- System generates print job
- IPP Protocol used to **POST** print jobs to CUPS server
- CUPS server filters convert job to printable format
- Applications
  - Built with CUPS support can print directly to printer and set printer options based on PPD (like Windows applications)
  - Old applications use CLI commands (`lpr`) to send postscript print jobs to CUPS server