# UniVerse printing in a CUPS world
# Configuring CUPS to accept input from a UniVerse Driver

Robert F. Woods

11/20/08

# Contents

# 1 Introduction

Printing from UniVerse to an enhanced capabilities printer.

The laser jet printers of today have the capability to process many commands in the print stream. Some of them are:

1. Postscript (standard usage by all of microsoftdom.)
2. HPGL – plotting world.
3. PCL – somewhat dated but still supported.
4. text

UniVerse programs typically send print streams in one of four formats.

1. text – usually from English / info / access type reports or from Basic programs.
2. Escape sequences for antique dot matrix printers.
3. PCL – mostly from basic programs. Sometimes used for BarCode printing.
4. Postscript – very few Pick applications print Postscript. I have not recently encountered any. Potential candidates might be CompuSheet, AccuPlot etc.

## 1.1 PostScript Printer Description

From Wikipedia, the free encyclopedia PostScript Printer Description Filename extension .ppd

PostScript Printer Description (PPD) files are created by vendors to describe the entire set of features and capabilities available for their PostScript printers.

A PPD also contains the PostScript code (commands) used to invoke features for the print job. As such, PPDs function as drivers for all PostScript printers, by providing a unified interface for the printer's capabilities and features.

## 1.2 CUPS

CUPS uses PPD drivers for all of its PostScript printers, and has even extended the concept to allow for PostScript printing to non-PostScript printing devices, by directing output through a CUPS filter. Such a file is no longer a standard PPD, but rather a "CUPS-PPD".

## 1.3 Installation specifics

Typical Linux installations and RedHat in particular utilize the CUPS environment as the default spool environment. CUPS has a few drivers that support PCL commands but largely the default is Postscript. The intent being that the graphic applications from the desktop / workstation are going to be using Linux Star Office and other graphics applications. This environment does not suit the typical UniVerse installation very well.

# 2 Basics

Following are two scripts that will setup a CUPS printer queue that will pass the PCL commands through to an enhanced printer without modification. Careful testing is dictated.

While accessing the system as an administrative user, place both of these scripts into /usr/local/bin and make it your current working directory. Modify the makeprinter script to match your environment and then enter the following two commands. If the printer queue does not already exist, the lpadmin -x hptest will give an error the first time executed.

```
chmod  u+x makeprinter
./makeprinter
```

Note: the awk command in pclfilter.sh will solve your stair stepping issues. If you have solved these in some other fashion, you might want to replace the command with:

```
cat $6 and test.

pclfilter.sh

#!/bin/bash
#
#
# Interface script for PCL printing
#
cat $6|awk '{printf "%s\r\n",$0}' -

makeprinter

#!/bin/bash
#
## A script to create a test print queue
# Where hptest is the name of the queue
# and hp2100 is the host / IP address
# of the print device.
lpadmin -x hptest
lpadmin -p hptest -E -v socket://hp2100:9100 \
-i pclfilter.sh \
-D "printer description" \
-L "printer location"
```

# 3 Further ideas for consideration

The techniques described above are documented in chapter 16 Writing File Filters for CUPS. CUPS: Common UNIX Printing System By: Michael R. Sweet Published by: SAMS ISBN: 0-672-32196-3

Some enhanced capabilities are shown below. The filter has access to command line parameters and environment variables, some of which are exhibited in the following script and are written to a log file. These are also documented in chapter 16.

```
#!/bin/bash
#
# Interface script for PCL printing
#
ARGSCRIPT=$0
ARGJOB=$1
ARGUSER=$2
ARGTITLE=$3
ARGCOPIES=$4
ARGoptions=$5

echo "$ARGSCRIPT $ARGJOB $ARGUSER $ARGTITLE $ARGCOPIES $ARGoptions" \
> /tmp/log

echo "$PRINTER $CONTENT_TYPE $PPD $TMPDIR $USER" >> /tmp/log

cat $6|awk '{printf "%s\r\n",$0}' -
```

# 4 CUPS filter enhanced

It is possible for the CUPS environment to pass options to the filter. These are generated using the lp command with -o options. The following filter will generate PCL commands based on some of those options and is to be considered a spring board to develop your own tailored filter for your environment. You would use it in the same fashion as the PCL filter described above.

```
#!/bin/sh
#
# Interface script for LaserJet printers.
#
# This script supports the following options:
#
#     PageSize/media=letter
#     PageSize/media=tabloid
#     PageSize/media=a4
#     PageSize/media=a3
#
#     InputSlot/media=manual
#     InputSlot/media=tray1
#     InputSlot/media=tray2
#     InputSlot/media=tray3
#
#     landscape
#     nolandscape
#
#     cpi=N
#     lpi=N
#
# This is a standard System V interface script; the arguments are
# as follows:
#
#     printer job user title copies options filename
# $0   $1 $2   $3    $4 $5   $6

# Parse options and set defaults ...
landscape=0 # Portrait
size=2 # Letter
#size=26 # A4
```

```
tray=0 # Auto tray
cpi=10 # Characters per inch
lpi=6 # Lines per inch
copies=$4

for option in $5; do
# Separate the name and value from "name=value", and handle
# "name=value,value,value,..."
name=‘echo $option | awk -F= ’{print $1}’‘
values=‘echo $option | awk -F= ’{print $2}’ | sed -e ’1,$s/,/ /g’‘

case $name in
PageSize | InputSlot | media)
for value in $values; do
case $value in
letter)
size=12
;;

tabloid)
size=6
;;

a4)
size=26
;;

a3)
size=27
;;

manual)
tray=2
;;

tray1)
tray=1
;;

tray2)
tray=4
;;

tray3)
```

```
tray=5
;;
esac
done
;;

landscape)
landscape=1
;;

nolandscape)
landscape=0
;;

cpi)
cpi=$values
;;

lpi)
lpi=$values
;;
esac
done
# Send PCL reset command...
echo -e "\033E\c"

# Set the number of copies...
echo -e "\033&l${copies}X\c"

# Set media size, tray, and orientation...
echo -e "\033&l${size}A\c"
if test "$tray" != 0; then
echo -e "\033&l${tray}H\c"
fi
echo -e "\033&l${landscape}O\c"

# Set text mode stuff (LF for line endings, etc...)
echo -e "\033&k2G\c"

# Set text font...
pts=‘echo $lpi | awk ’{printf("%.2f\n", 72.0 / $1);}’‘
vsp=‘echo $lpi | awk ’{printf("%.2f\n", 48.0 / $1);}’‘
echo -e "\033(s0T\033(s${cpi}H\033(s${pts}V\033&l${vsp}C\c"
```

```
# Send the print file...
cat $6

# Send PCL reset command...
echo -e "\033E\c"

# Done!
exit 0
```

# 5 UniVerse Configuration

Please refer to my "UniVerse print drivers" document for help in configuring UniVerse to print in a UNIX world.