UniVerse print drivers

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Contents

1 Introduction

The UniVerse database software incorporates a complete spooler. This spooler has many capabilities and features. It can spool output directly to a serial or paralled device as defined in the UNIX device file (/dev).

The spooler can also queue output through the UNIX spooler. If your system has network accessable printers, this is the most straight forward method to send UniVerse reports to those printers.

This paper will explore the methods used to connect the UniVerse spooler to your UNIX environment.

Technically, the UniVerse documentation refers to these scripts as "drivers". To me, the term driver is more generally applied to the actual spool environment where the driver is the interface directly to the device.

If UniVerse is installed on a Microsoft platform, the UniVerse spooler is not used and output is controlled by the SETPTR command and data streams are sent directly to the Microsoft print environment.

2 Background

The first step for the installation, is to determine the location of your UniVerse spool directory. You can find it with the following commands.

```
# grep "^UVSPOOL" ‘cat /.uvhome‘/uvconfig
UVSPOOL /usr/spool/uv
```

Note you must be an administrative user to execute the above command. Also note the use of the ‘ symbol. This is the grave mark or backtic.

The above example shows the location of my UniVerse spooler directory to be /usr/spool/uv. This is the directory for the location of several distinct types of files.

1. sp.config – This is the file that contains the definitions of all your printers. It should be maintained using the UniVerse Administration menus. When changes are applied, the Administration suite will cause the spooler daemons to reread the new configuration.

2. Spool files. – As UniVerse sends output to the printer, it creates temporary and hold files. They are stored in this directory.

3. Log files – By convention you would direct UniVerse spooler log files to this directory.

4. Error files – By convention you would direct UniVerse spooler error files to this directory.

5. UniVerse print drivers – By convention you would maintain UniVerse spooler script files in this directory. These scripts are not drivers in the strictest sense of the word. They are scripts that take standard output from the UniVerse spooler process and may process it according to design. Output from these scripts may be sent to UNIX print queues, archive files, COLD storage or processed to pdf files and e-mailed. The possibilities are endless.

6. Lock files – You should specify a lock file for each UniVerse printer defined. Convention dictates that these lock files be maintained in this directory. These are temporary files and only are present while a UniVerse process is printing. Then they will disappear. ‘

3 UniVerse Spooler Administration notes

The UniVerse spooler administration menu has the following maintain devices selection.

```
+-----------------------------  Maintain Devices  -----------------------------+
|                 File               Action               Help                 |
+------------------------------------------------------------------------------+
|                                                                              |
| Printer Name    : M80                     Baud Rate     : 9600               |
| Pathname        : /dev/null               Parity        : None               |
| Driver          : /usr/spool/uv/m80.drv   CR Mode       ? None               |
| Form            :                         Tab Expansion : ON                 |
| Flow control    : XOFF STARTANY OFF       FF Delay      : No formfeed        |
| Enable Printing : Y                       LF Delay      : None               |
| Enable Queuing  : Y                       Word Length   : 8                  |
| Lock file 1     : m80.lock                                                   |
| Lock file 2     :                                                            |
| Other Options   :                                                            |
|                                                                              |
|                                                                              |
+-------------------------------  Help Region  --------------------------------+
|Please enter the desired CR Mode translation, in the same fashion as a PTERM  |
|option, or a <F4> for a list of commonly used CR modes.                       |
|                                                                              |
|                                                                              |
|                                                                              |
+------------------------------------------------------------------------------+
```

This selection exhibits the use of a Driver. This is the fully qualified UNIX path to the script we will explore in the next chapter. I typically default everything on this screen as shown except the Lock file. I suggest you always setup a lock file for a UniVerse queue.

```
+-----------------------------  Maintain Devices  -----------------------------+
|                 File               Action              Help                  |
+------------------------------------------------------------------------------+
|                     +----------  CR Mode  ----------+                        |
| Printer Name    : M8|  No Conversion                |    : 9600               |
| Pathname        : /d|  Convert LF to CR/LF          |    : None               |
| Driver          : /u|  Convert CR to LF             |    ? None               |
| Form            :   |  No CR @(0,0)                 |on : ON                  |
| Flow control    : XO+-------------------------------+    : No formfeed        |
| Enable Printing : Y                      LF Delay      : None               |
| Enable Queuing  : Y                      Word Length   : 8                  |
| Lock file 1     : m80.lock                                                   |
| Lock file 2     :                                                            |
| Other Options   :                                                            |
|                                                                              |
|                                                                              |
+-------------------------------  Help Region  --------------------------------+
|Use the arrow keys and the PageUp/PageDown keys to find the item you wish to  |
|select, and then press <Return> or <SpaceBar> to select the item, or          |
|<Escape> to exit with no selection.                                           |
|                                                                              |
|                                                                              |
+------------------------------------------------------------------------------+
```

Please note the display shows the CR mode options. I have not tested the Convert LF to CR/LF option. It may be possible to eliminate stairstepping using this option.

4 Basic scripts

The most basic script might look as follows:

```
cat - | lp -d lp54
```

A script to eliminate ”stairstepping” would look like:

```
awk '{printf "%s\r\n",$0}' - |lp -d lp54
```

These scripts have no documentation or ownership. I suggest some documentation as follows:

```
#!/bin/bash
#
# By Robert F. Woods
# for Strategy 7
# 5/8/2006
# Printer driver for UniVerse applications
#
awk '{printf "%s\r\n",$0}' - |lp -d lp54
```

All scripts must have execute permissions for user, group and other.

```
-rwxr-xr-x 1 root    root  1630 2008-11-25 12:41 test.drv
```

5 Advanced scripts

5.1 Using UniVerse arguments in the script

5.1.1 Parsing out the arguments

The following driver script will capture all the arguments passed by UniVerse and log them to a test.log file. The print stream will be captured to a file with the file id equal to the numeric user id of the user that printed the report and the UniVerse job number. Nothing will be sent to any printer.

Driver script

```
# cat -n test.drv

#!/bin/bash
#
# By Robert F. Woods
# 11/25/2008
#
# paramtest.drv
#
# Printer driver to capture the contents of the UniVerse arguments.
#
#
# UniVerse sends options along with the print file. This script captures
# relevant information and logs them to a file.
#
#
# $1 = login userid UNIX user ID of the user who spooled the job
# $2 = UniVerse job id of the print job
# $3 = size of the print job in bytes
# $4 = Job description
# $5 = UniVerse form queue number
# $6 = UniVerse printer or spool queue name
# $7 = line length
# $8 = page length
# $9 = eject flag (1 = EJECT, 0 = NOEJECT)
# $10 = banner flag (1 = print banner, 0 = suppress banner)
# $11 = USEROPTS options
# Note shift required to access 10 and 11


UVUID=$1
JOBNUM=$2
JOBSIZE=$3
JOBNAME=$4
FORMQ=$5
PRINTNAME=$6
JOBCOL=$7
JOBPAGE=$8
JOBEJECT=$9
shift 9
JOBBANNER=$1
JOBOPTS=$2


echo $UVUID "--> login userid UNIX user ID of the user who spooled the job" >> test.log
echo $JOBNUM "--> UniVerse job id of the print job" >> test.log
echo $JOBSIZE "--> size of the print job in bytes" >> test.log
echo $JOBNAME "--> Job description" >> test.log
echo $FORMQ "--> UniVerse form queue number" >> test.log
echo $PRINTNAME "--> UniVerse printer or spool queue name" >> test.log
echo $JOBCOL "--> line length" >> test.log
echo $JOBPAGE "--> page length" >> test.log
echo $JOBEJECT "--> eject flag (1 = EJECT, 0 = NOEJECT)" >> test.log
echo $JOBBANNER "--> banner flag (1 = print banner, 0 = suppress banner)" >> test.log
echo $JOBOPTS "--> USEROPTS options" >> test.log

# Following line captures the print stream from UniVerse to a log file.
cat - >> $UVUID.$JOBNUM
```

UniVerse printer configuration for test

```
+-----------------------------  Maintain Devices  -----------------------------+
|                 File              Action                Help                 |
+------------------------------------------------------------------------------+
|                                                                              |
| Printer Name    : TEST                    Baud Rate     : 9600               |
| Pathname        ? /dev/null               Parity        : None               |
| Driver          : /usr/spool/uv/test.drv  CR Mode       : None               |
| Form            :                         Tab Expansion : ON                 |
| Flow control    : XOFF STARTANY OFF       FF Delay      : No formfeed        |
| Enable Printing : Y                       LF Delay      : None               |
| Enable Queuing  : Y                       Word Length   : 8                  |
| Lock file 1     : testlock                                                   |
| Lock file 2     :                                                            |
| Other Options   :                                                            |
|                                                                              |
|                                                                              |
+-------------------------------  Help Region  --------------------------------+
|Enter the Pathname of the device to print to.                                 |
|                                                                              |
|                                                                              |
|                                                                              |
|                                                                              |
+------------------------------------------------------------------------------+
```

Setptr settings for user environment

```
>SETPTR
Unit Number   : 0
Page Width    : 132
Page Depth    : 66
Top Margin    : 3
Bottom Margin : 3
Print mode    : 1 - Spooled Output

Print spool banner    : "BOBS REPORT"
Destination printer   : TEST
```

UniVerse generation of spooler output

```
>SORT ONLY VOC SAMPLE 10 LPTR
```

Contents of log file

```
501 --> login userid UNIX user ID of the user who spooled the job
```

```
7 --> UniVerse job id of the print job
200 --> size of the print job in bytes
BOBS REPORT --> Job description
--> UniVerse form queue number
TEST --> UniVerse printer or spool queue name
132 --> line length
66 --> page length
1 --> eject flag (1 = EJECT, 0 = NOEJECT)
1 --> banner flag (1 = print banner, 0 = suppress banner)
--> USEROPTS options
```

Size of captured print data stream

Notice the file id is the 501 User Id and the 7 from the Job id above.

```
-rw-r--r-- 1 root    root  3463 2008-11-25 12:54 501.7
```

Note the file size of 3463 contains 3263 bytes of banner information. The actual text sent by UniVerse is only 200 bytes as reported above in the size argument.

5.1.2 Placing jobs in the queue based on the user id

The UniVerse spooler runs as a root level daemon. This places all jobs in the UNIX queue as if they were printed by the root user. Sometimes it may be desireable to place the jobs in the queue under the actual user's name.

The following driver script will capture all the arguments passed by UniVerse and log them to a test.log file. The print stream will be captured to a file with the file id equal to the numeric user id of the user that printed the report and the UniVerse job number. Nothing will be sent to any printer. The script also extracts the user id from the /etc/passwd file and stores the file as owned by that user.

Driver script

```
# cat -n usr.drv

#!/bin/bash
#
# By Robert F. Woods
# 11/25/2008
#
# usr.drv
#
# Printer driver to capture the contents of the UniVerse arguments.
# Enhanced to change the user name from root to the user that originated the print command.
#
#
```

```
# UniVerse sends options along with the print file. This script captures
# relevant information and logs them to a file.
#
#
# $1 = login userid UNIX user ID of the user who spooled the job
# $2 = UniVerse job id of the print job
# $3 = size of the print job in bytes
# $4 = Job description
# $5 = UniVerse form queue number
# $6 = UniVerse printer or spool queue name
# $7 = line length
# $8 = page length
# $9 = eject flag (1 = EJECT, 0 = NOEJECT)
# $10 = banner flag (1 = print banner, 0 = suppress banner)
# $11 = USEROPTS options

# Note shift required to access 10 and 11


UVUID=$1
JOBNUM=$2
JOBSIZE=$3
JOBNAME=$4
FORMQ=$5
PRINTNAME=$6
JOBCOL=$7
JOBPAGE=$8
JOBEJECT=$9
shift 9
JOBBANNER=$1
JOBOPTS=$2


echo $UVUID "--> login userid UNIX user ID of the user who spooled the job" >> test.log
echo $JOBNUM "--> UniVerse job id of the print job" >> test.log
echo $JOBSIZE "--> size of the print job in bytes" >> test.log
echo $JOBNAME "--> Job description" >> test.log
echo $FORMQ "--> UniVerse form queue number" >> test.log
echo $PRINTNAME "--> UniVerse printer or spool queue name" >> test.log
echo $JOBCOL "--> line length" >> test.log
echo $JOBPAGE "--> page length" >> test.log
echo $JOBEJECT "--> eject flag (1 = EJECT, 0 = NOEJECT)" >> test.log
echo $JOBBANNER "--> banner flag (1 = print banner, 0 = suppress banner)" >> test.log
echo $JOBOPTS "--> USEROPTS options" >> test.log

# Follwing line gets user name from etc passwd based on current userid.
# ie who is sending this print job. This user name will show in the UNIX queue.
```

```
WKUSER=‘cut -f1,2,3,4 -d":" /etc/passwd | /bin/grep "\:$UVUID\:" \
| /usr/bin/awk -F: ’{print $1}’‘
echo $WKUSER "--> User name as derived from /etc/passwd" >> test.log

# The following tests to see if root user spooled output other wise do a su and
# spool output as original user.
if [[ $UVUID -eq 0 ]]
        then
                cat - >> $UVUID.$JOBNUM
        else
                su $WKUSER -c "cat - >> $UVUID.$JOBNUM"
fi
```

UniVerse printer configuration for test

```
+-----------------------------  Maintain Devices  -----------------------------+
|                 File               Action               Help                 |
+------------------------------------------------------------------------------+
|                                                                              |
| Printer Name    : TEST                    Baud Rate     : 9600               |
| Pathname        ? /dev/null               Parity        : None               |
| Driver          : /usr/spool/uv/usr.drv   CR Mode       : None               |
| Form            :                         Tab Expansion : ON                 |
| Flow control    : XOFF STARTANY OFF       FF Delay      : No formfeed        |
| Enable Printing : Y                       LF Delay      : None               |
| Enable Queuing  : Y                       Word Length   : 8                  |
| Lock file 1     : testlock                                                   |
| Lock file 2     :                                                            |
| Other Options   :                                                            |
|                                                                              |
|                                                                              |
+-------------------------------  Help Region  --------------------------------+
|Enter the Pathname of the device to print to.                                |
|                                                                              |
|                                                                              |
|                                                                              |
|                                                                              |
+------------------------------------------------------------------------------+
```

Setptr settings for user environment

```
>SETPTR
Unit Number   : 0
Page Width    : 132
Page Depth    : 66
Top Margin    : 3
Bottom Margin : 3
Print mode    : 1 - Spooled Output

Print spool banner    : "BOBS REPORT"
Destination printer   : TEST
```

UniVerse generation of spooler output

```
>SORT ONLY VOC SAMPLE 10 LPTR
```

Contents of log file

```
501 --> login userid UNIX user ID of the user who spooled the job
```

```
13 --> UniVerse job id of the print job
200 --> size of the print job in bytes
BOBS REPORT --> Job description
--> UniVerse form queue number
TEST --> UniVerse printer or spool queue name
132 --> line length
66 --> page length
1 --> eject flag (1 = EJECT, 0 = NOEJECT)
1 --> banner flag (1 = print banner, 0 = suppress banner)
--> USEROPTS options
rfwoods --> User name as derived from /etc/passwd
```

Size of captured print data stream

Notice the file id is the 501 User Id and the 7 from the Job id above.

```
-rw-r--r-- 1 rfwoods adm   3463 2008-11-25 17:15 501.13
```

Note: The file is now owned by the actual user that sent the job.

5.1.3 Change to actually queue something to the printer

Driver script

```
Only the changed portion of the script from above is shown.

if [[ $UVUID -eq 0 ]]
        then
                cat - |lp -dmyhp2100
        else
                /bin/su $WKUSER -c "/bin/cat - |lp -dmyhp2100"
fi
```

Changed the driver to send all output to myhp2100 print queue.

The spool queue showing job owned by rfwoods

```
printer myhp2100 disabled since Tue 25 Nov 2008 05:18:16 PM MST -
        Paused
myhp2100-152            rfwoods           4096   Tue 25 Nov 2008 05:40:14 PM MST
```

5.1.4 Argument driven commands to CUPS PCL queues

5.2 UniVerse to pdf to e-mail

5.2.1 Creating pdf files from text

5.2.2 Testing e-mail capabilities

5.2.3 Argument driven commands to CUPS PCL queues

5.3 UniVerse to pdf to e-mail

5.3.1 Creating pdf files from text

5.3.2 Testing e-mail capabilities

5.3.3 Putting it all together

Portrait

Landscape

6 Troubleshooting your configuration

6.1 UniVerse print queue options and help

6.2 Connection between UniVerse and your driver

6.3 Logging the actions of the UniVerse spooler

6.4 logging the actions of your driver

7 UniVerse Documentation

Using Command Line Arguments in Driver Scripts.

You can specify any of the following 11 arguments in a driver script:

```
Argument Description
   $1 UNIX user ID of the user who spooled the job
   $2 Job ID of the print job
   $3 Size of the print job in bytes
   $4 Job description
   $5 Form assigned to the print job
   $6 UniVerse printer name
   $7 SETPTR(UNIX) line length
   $8 SETPTR(UNIX) page length
   $9 SETPTR(UNIX) eject flag (1 = EJECT, 0 = NOEJECT)
Shift the argument stack down to reference the following two arguments:
   $1 SETPTR(UNIX) banner flag (1 = print banner, 0 = suppress banner)
   $2 SETPTR(UNIX) USEROPTS options
```

See UniVerse Administration manual for further discussions and documentation of driver programming. [1]

[1] UniVerse Systems Administration Manual