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A simple printer-server
for remote workstations

software and documentation
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1. Introduction

If you have ... a VAX with an LN03 printer,
 ... a Sun or other workstation without a printer,
 ... any way of exchanging files among the two
 systems,

this note will tell you how to set up a simple (actually
trivial) mechanism to print the files of the workstation onto
the VAX printer, with a simple command.

I have actually set up this mechanism in Milan, and I will
describe it here (with some generality) in the form it works
here.

2. All what the user shall know

All what the user shall know is :

- ... how to print a file from the workstation
- ... what options for printing
- ... how to control the printer server

2.1 How to print a file

The command to print a file, as setup in Milano, is the following:

vprint file (options)

This command will copy the file to the printer-server "spool" area on VAX. **IF** the printer-server is on, it will wake up every minute, and dispose of (print) all files in the "spool" area.

You will **not** get any notification when the file is printed. Be ready to wait at least for one minute (the printer-server wakes up only every minute). If nothing comes out of the LN03 then, you should check whether the printer server is active.

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2.2 What options for printing

You may specify **one** option to the vprint command (or no option). The current options are as follows (no abbreviations permitted):

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elite	print in elite font, portrait arrangement
small	print in small font, portrait arrangement
landscape	print in small font, landscape arrangement
plain	do not implies any specific font

If you specify no option, the default is **elite**.

The **plain** option will use whatever setting is currently set-up in the LN03. In Milano this means the factory default (Courier font, portrait, no margins; this is not very nice as 80 columns do not fit in a page). This mode is intended for the sending of files which contain printer control codes (e.g. Tektronix or PostScript graphics, or user's escape sequences), when it is desirable to bypass the formatting in the three other fonts/arrangements.

The other arrangements include proper margins.

2.3 How to control the printer server

To check whether the printer server is active,

on VAX do a **SHO QUE/ALL:** you should see a SYSTEM batch job called PRINTER_SERVER in the "executing" state. Alternatively do a **SHO SYS,** and you should see a process called PRINT_SERVER.

If it is not there, you shall bring it up.

To check whether your file is printing,

you can do a normal **SHO QUE** and see if there is a job called ELITE, SMALL or LANDSCAPE (or as your file, if you select **plain** format).

if there is nothing in the queue, it may well be that the printer server did not yet wake up. You can do a **DIR DUA0:[SUNPRINT]** to check whether your file is there (be careful, the name will be slightly modified).

To start the printer server,

log in (on VAX) as user **SUNPRINT** (no password). You will be presented a choice of three options. Select option number **1.**

If you try to startup the printer server when already running, you will get an error.

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To stop the printer server,

log in (on VAX) as user **SUNPRINT** and select option number **2.**

Please note the server will stop only at the next minute it wakes up again, not immediately.

The SUNPRINT account is a captive account, therefore normal login under this username is disabled.

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3. All what the system manager shall know

3.1 Setting up all what necessary

If you want to set up the printer server, you have to pass through the following steps :

a) on VAX, create a directory [server] and a subdirectory under it [server.home]. The names server and home shall be replaced by anything of your choice (in Milano they are SUNPRINT and HOME). Anybody shall have RW access to the [server] directory.

b) make the above directories owner by an account [server]. This account shall be created as :

```
captiv account
login directory [server.home]
lgicmd          LOGIN.COM
privileges      BYPASS, READALL, CMKRNL
```

c) put in the [server] directory the SERVICE.COM procedure (listed in appendix), and a set of .H files.

SERVICE.COM is the body of the batch procedure of the printer server.

The .H files contain the laser printer escape sequences for the predefined fonts and formats. You may want to change these and add new ones (the latter implies changing SERVICE.COM). The current version implies ELITE.H, SMALL.H and LANDSCAPE.H (there is no .H file for the **plain** format).

For LN03 the .H files typically contain a reset sequence, and the font, orientation and margin selection (maybe also autowrap on/off). BEWARE : if you TYPE such files, the reset sequence will reset your terminal !!

d) Put in [server.home] the LOGIN.COM procedure (listed in appendix): this is the procedure used to initiate and stop the batch execution of SERVICE.COM).

Note the way the procedure checks whether a printer-server process exists, and the qualifiers of the SUBMIT command (a captive account cannot submit batch jobs for himself, but it can for others, provided it has the correct privileges).

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e) On your workstation, in a public path, provide a shell script vprint, which accepts and processes two arguments. You can write your own script, or customize the existing one, according to the modality you use for file transfer.

The printer server on VAX does not care whether he receives files in the [server] directory via NFS, FTP, DECNET or any other mean, therefore you are free to set up your shell script as you like.

You can use the csh script provided in the appendix as a template. This script uses NFS to copy the files. If you use NFS you can use this script with the following customization :

look for the lines with --> and read the comments therein

insert the name of the mount point of the VAX root as host

insert the name of the [server] directory as target

If you do not use NFS, change the commands on the last lines of the script as appropriate provided that :

you copy your Unix file onto [server] assigning it a new name, that is, replacing all periods (.) with underscores (_), as in the following examples :

```
pinco.pallino      into    PINCO_PALLINO.;
panco              into    PANCO.;
tizio.caio.sempronio into
TIZIO_CAIO_SEMPRONIO.;
.cshrc            into    _CSHRC.;
```

(the names indicated here are the resulting VMS names; you shall generally NOT bother to convert them to upper case or to add the .; at the end. Your software (NFS, FTP, Decnet) will do it for you.

You copy onto [server] an additional, **empty** file, which has the same **name** as the copied file (after period-to-underscore conversion), and has a **type** of ELITE, SMALL, LANDSCAPE or PLAIN. So in the examples above, create :

PINCO_PALLINO.ELITE
PANCO.ELITE
etc.

3.2 How does the batch operate ?

The printer server operates as a batch job, which is permanently there and wakes up every minute (you may change this time if you wish; the current CPU load is about 0.1 s every minute, just for monitoring, if no printing occurs).

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As a preliminary the batch changes the process name to PRINT_SERVER, goes to the appropriate default directory, and cleans it up (deletes a placeholder file PRINT_SERVER.STOP used to shutdown the server).

Then the batch (every minute) executes a scan of its working directory as follows:

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If a PRINT_SERVER.STOP file is found (this may be set up by the captive account LOGIN file in case a shutdown is requested), the batch terminates.

"Resident" files are ignored (this includes the batch itself, the subdirectories, and the .H files ... if you add any please modify the batch code).

"Control" files (that is, those with types .ELITE, .SMALL and .LANDSCAPE) are ignored at this stage.

For any other file, it checks whether there is an associate control file (of the same name, but with one of the types mentioned above):

If there is none, it means the transmission has not yet been completed, and the file is left alone for this time (it will be processed at the next minute)

If there is a control file, printing action is initiated.

Printing actions implies a print job concatenating the appropriate .H file (printer escape sequences) in front of the file to be printed. The file is deleted automatically after print. The associated control file

is deleted explicitly.

When the scan loop is completed, the batch reschedules itself one minute later.

The printer server control is done by the server captive account's LOGIN.COM. Note that the dialogue with a captive account cannot occur via the DCL command INQUIRE (but READ SYS\$COMMAND works).

If a startup is requested, the procedure checks whether a printer server process is already there. If it is, prompts again (in the case you may want to stop it).

Shutdown is done by creating an empty file PRINT_SERVER.STOP, which is trapped by the printer server batch the next time it wakes up.

Normal login is disabled by the captive nature of the account, the option 0 is just there to allow you to exit with no action.

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3.3 Bugs and possible improvements

While the period-to-underscore conversion allows to print files of same "name" and different "type", printing of more versions of a file with the same name is not possible if they are sent during the same minute (this occurs also in the unlikely case two users send files with the same name).

There is no provision if the Unix filename contains characters illegal under VMS.

At the moment there is no provision for the VAX to send back to the workstation user an acknowledgment or notification when the file has been printed.

It should be possible for the printer server to use not only the existence of the control files, but also their content (e.g. to set up alternate page layout, etc.).