

Comprovació del ParaVision

En aquest pas, la feina es comprovar la instal·lació de ParaVision i resoldre els problemes que impedeixin que s'executi el programa, entre altres:

- crear els usuaris i grups necessaris per córrer el programa;
- ajustar els permisos i propietaris de les carpetes del programa;
- crear els fitxers i variables d'entorn necessàries perquè el programa funcioni correctament;
- satisfer les dependències del ParaVision respecte biblioteques compartides (shared libraries) del sistema i altres programes.

Usuaris i grups

Aquests són els usuaris i grups relacionats amb el ParaVision a l'ordinador antic que s'hauran de crear al nou ordinador,

```
[root@sermn112 PV5.1]# cat /etc/passwd
root:x:0:0:root:/root:/bin/bash
...
mri:x:500:500:SeRMN Users:/home/mri:/bin/bash
nmrsu:x:501:501:Bruker Topspin/ParaVision Superuser:/home/nmrsu:/bin/bash
flexlm:x:502:502:FLEXlm Licence Manager:/nonexistent:/bin/sh

[root@sermn112 PV5.1]# cat /etc/shadow
...
mri:<password>:13998:0:99999:7:::
nmrsu:<password>:14407:0:99999:7:::
flexlm:!!:13998:0:99999:7:::

[root@sermn112 PV5.1]# cat /etc/group
...
mri:x:500:
nmrsu:x:501:nmrsu,mri
flexlm:x:502:flexlm
```

Un cop creats, el resultat és:

```
root@cie-50-189:/etc# tail -2 /etc/passwd
nmrsu:x:1003:1003:Bruker TopSpin/ParaVision Superuser:/home/nmrsu:/bin/bash
flexlm:x:1004:1004:FLEXlm Licence Manager:/nonexistent:/bin/sh

root@cie-50-189:/etc# tail -2 /etc/group
nmrsu:x:1003:sermnmri
flexlm:x:1004:
```

```
root@cie-50-189:/etc# tail -2 shadow
nmrsu:<password>:17381:0:99999:7:::
flexlm:!!:17381:0:99999:7:::
```

Canvi de propietaris de les carpetes i fitxers

La transferència de les carpetes i fitxers amb els permisos i propietaris que hi havia a l'antic ordinador, ha fet que es mantinguin els UID/GID originals dels fitxers i que ara sigui necessari corregir-los, per exemple, amb la comanda,

```
# cd /opt/PV5.1
# find . -type d -uid 501 -exec chown nmrsu:nmrsu {} \;
```

Definició dels serveis locals de Bruker

Cal afegir les següents línies al final del fitxer */etc/services* per definir els serveis locals de Bruker,

```
# Local services
bfs      2201/udp      # BRUKER: bootfileserv
bruker_ls 1700/tcp      # FLEXlm licensing for Bruker
bbmri_ls  1700/tcp      # FLEXlm licensing for Bruker
```

Configuració del kernel



Comprovar si cal mantenir aquesta configuració

A l'antiga instal·lació hi ha la següent línia al fitxer */etc/sysctl.conf* per configurar la memòria compartida que no aplico per ara.

```
# kernel.shmmax: Set shared memory size to total memory size (for BRUKER
TOPSPIN, ParaVision).
kernel.shmmax = 1052028928
```

installpv - ParaVision post-installation script

Executo la comanda *installpv* per comprovar/corregir/completar la instal·lació del ParaVision,

```
root@cie-50-189:/opt/PV5.1/prog/bin# ./installpv /opt/PV5.1 nmrsu
Environment variable XWINNMRHOME defaults to /opt/PV5.1
-----
```

```
installpv for ParaVision running under LINUX 4.6.0-0.bpo.1-amd64
```

```
Current installation script version :
```

```
$Id: installpv,v 1.305.2.54 2010/04/21 12:40:09 cwe Exp $
```

```
-----  
your selections are:
```

```
    ParaVision installation path : /opt/PV5.1
```

```
    The NMR Superuser will be    : nmrsu
```

```
++++
```

```
INFO      (Fri Aug  4 10:39:48 2017)
```

```
++++
```

```
Validating NMR Superuser ...
```

```
++++
```

```
INFO      (Fri Aug  4 10:39:48 2017)
```

```
++++
```

```
NMR Administration Password for special privileges
```

```
Nothing to do
```

```
++++
```

```
INFO      (Fri Aug  4 10:39:48 2017)
```

```
++++
```

```
Full TopSpin version found, continuing with normal installation procedure
```

```
..
```

```
++++
```

```
INFO      (Fri Aug  4 10:39:48 2017)
```

```
++++
```

```
Call cf/expinstall after first start
```

```
++++
```

```
INFO      (Fri Aug  4 10:39:48 2017)
```

```
++++
```

```
Creating/removing some directories ...
```

```
++++
```

```
INFO      (Fri Aug  4 10:39:48 2017)
```

```
++++
```

```
Make symbolic links for Inventor ...
```

```
++++
```

```
INFO      (Fri Aug  4 10:39:48 2017)
```

```
++++
```

```
Create dump file for java shared classes ...
```

```
++++
```

```
INFO      (Fri Aug  4 10:39:49 2017)
```

```
++++
```

```
Make symbolic links for System Libs in /opt/PV5.1/prog/pvshlib ...
```

```
++++
INFO      (Fri Aug  4 10:39:49 2017)
++++
Make symbolic links for System Libs in /opt/PV5.1/prog/shlib ...

++++
INFO      (Fri Aug  4 10:39:49 2017)
++++
Check OpenGL support...

!!!!!!!
WARNING (Fri Aug  4 10:39:49 2017)
!!!!!!!
No suitable OpenGL driver found; installing MESA, if not present...

++++
INFO      (Fri Aug  4 10:39:49 2017)
++++
Running post-installation scripts ...

++++
INFO      (Fri Aug  4 10:39:49 2017)
++++
Adjusting Makefiles in exported parameter sources ...

++++
INFO      (Fri Aug  4 10:39:49 2017)
++++
installpv detected an already existing ParaVision Configuration, OK

++++
INFO      (Fri Aug  4 10:39:49 2017)
++++
Install default datastation configuration ...

++++
INFO      (Fri Aug  4 10:39:50 2017)
++++
Setting up CORBA Name Service for default distribution ...

++++
INFO      (Fri Aug  4 10:39:50 2017)
++++
CORBA Name Service is not running at the moment ...

++++
INFO      (Fri Aug  4 10:39:50 2017)
++++
Configuring CORBA Name Service ...
```

```
++++
INFO      (Fri Aug  4 10:39:50 2017)
++++
Starting new CORBA Name Service ...
nohup: ignoring input and redirecting stderr to stdout

++++
INFO      (Fri Aug  4 10:39:55 2017)
++++
Answer is : Starting CORBA name service: -e done

++++
INFO      (Fri Aug  4 10:39:55 2017)
++++
nmrsu      12550      1  6 10:39 ?          00:00:00
/opt/PV5.1/jre1.6.0_13/bin/orbd -J-server -J-Xmx16m
-J-Dcom.sun.CORBA.transport.ORBUseNIOSelectToWait=false -ORBInitialPort
12345 -defaultdb /var/log/CORBA
root       12573 12438  0 10:39 pts/3      00:00:00 sh -c ps -efw | grep orbd
root       12575 12573  0 10:39 pts/3      00:00:00 grep orbd

++++
INFO      (Fri Aug  4 10:39:55 2017)
++++
Checking/setting overcommit policy for processes ...

++++
INFO      (Fri Aug  4 10:39:55 2017)
++++
Updating permissions of ParaVision/TopSpin ...
.....
.....
.....
.....
.....
.....
.....
.....
++++
INFO      (Fri Aug  4 10:39:57 2017)
++++
Creating checksum file for installation ...
find: `/tftpboot': No such file or directory

++++
INFO      (Fri Aug  4 10:40:34 2017)
++++

/opt/PV5.1/prog/service/chkpv.pl:
( $Id: chkpv.pl,v 1.10.2.1 2009/10/20 12:28:31 roe Exp $)
```

```
freezing PV file tree /opt/PV5.1 of version 5.1 ...
=====
Results for snapshot of version /opt/PV5.1
=====
Checksum file /opt/PV5.1/prog/service/configuration.md5 from Fri
Aug  4 10:40:34 2017

++++
INFO      (Fri Aug  4 10:40:34 2017)
++++
ParaVision post-installation (SETUP) succeeded
```

installnmr - TopSpin post-installation script

Executo la comanda installnmr per comprovar/corregir/completar la instal·lació del TopSpin,

```
root@cie-50-189:/opt/PV5.1# ./prog/bin/installnmr -h
Usage:
  installnmr [-option ...] <Installation Path> <NMR-superuser>
  -encrypted <string>
  -help
  -noadmincheck
  -secure
  -useinstalled
  -verbose+

Hit <Enter> to continue ...

root@cie-50-189:/opt/PV5.1# ./prog/bin/installnmr -useinstalled

*-----*
TOPSPIN 2.0PV processing package
*-----*

Update permissions of ALL TOPSPIN FILES...
installation of TOPSPIN version processing package
continue with acquisition

*-----*
TOPSPIN ts_2_0 acquisition package
*-----*

... installing helevtransfer ...
- A copy of the original crontab file for user nmrsu is stored in
  /opt/PV5.1/cronfile.nmrsu.orig
... installation of helevtransfer finished.
File /opt/PV5.1/conf/instr/curinst exists!
```

```
'cf' already done for Datastation  
installation of TOPSPIN acquisition VS ts_2_0 finished  
exit: 0
```

Reset del NMR Administration Password

Per algun motiu, no aconseguixo que el programa *installnmr* accepti cap de les contrasenyes que fem servir habitualment com a NMR Administration Password, de forma que la reinicio segons es detalla a la *TopSpin 1.3 Installation Guide Linux*. Primer esborro el fitxer que conté el la contrasenya actual,

```
root@cie-50-189:/etc/init.d# cd /opt/PV5.1/  
root@cie-50-189:/opt/PV5.1# rm /opt/PV5.1/conf/nmradminpassword
```

i després en creo una de nova,

```
root@cie-50-189:/opt/PV5.1# ./prog/bin/installnmr /opt/PV5.1 nmrsu  
  
*-----*  
TOPSPIN 2.0PV processing package  
*-----*  
  
New password:  
Retype new password:  
Update permissions of ALL TOPSPIN FILES...  
installation of TOPSPIN version processing package  
continue with acquisition  
  
*-----*  
TOPSPIN ts_2_0 acquisition package  
*-----*  
  
... installing helevtransfer ...  
- A copy of the original crontab file for user nmrsu is stored in  
  /opt/PV5.1/cronfile.nmrsu.orig  
... installation of helevtransfer finished.  
File /opt/PV5.1/conf/instr/curinst exists!  
'cf' already done for Datastation  
installation of TOPSPIN acquisition VS ts_2_0 finished  
exit: 0
```

Comprovar la integritat de la instal·lació del ParaVision

Faig servir el programa `/~paravision/prog/service/chkpv.pl` per comprovar la integritat de la instal·lació,

```
root@cie-50-189:/opt/PV5.1# ./prog/service/chkpv.pl --verify /opt/PV5.1/
```

```
./prog/service/chkpv.pl:
( $Id: chkpv.pl,v 1.10.2.1 2009/10/20 12:28:31 roe Exp $)
Test started at Fri Aug  4 11:51:48 2017 for PV version 5.1
verifying /opt/PV5.1/ with file /opt/PV5.1//prog/service/configuration.md5,
please wait ...

=====
Integrity check results for /opt/PV5.1/
=====
Test finished at Fri Aug  4 11:51:51 2017
Checksum file from Fri Aug  4 10:40:34 2017
NUMBER OF FILES MODIFIED OR REMOVED: 46

00001 : /opt/PV5.1/prog/service/integrity.log : MODIFIED
      last modification at Fri Aug  4 11:51:51 2017

00002 : /opt/PV5.1/prog/service/configuration.md5 : MODIFIED
      last modification at Fri Aug  4 10:40:34 2017

00003 : /opt/PV5.1/prog/au/bin/DemoGetv : REMOVED
      after Thu Jan  1 01:00:00 1970

00004 : /opt/PV5.1/prog/au/bin/PVMepiAdjust : REMOVED
      after Thu Jan  1 01:00:00 1970

00005 : /opt/PV5.1/prog/au/bin/SvFidStab : REMOVED
      after Thu Jan  1 01:00:00 1970

00006 : /opt/PV5.1/prog/au/bin/SvRxDcTest : REMOVED
      after Thu Jan  1 01:00:00 1970

00007 : /opt/PV5.1/prog/au/bin/SvRxadDcTest : REMOVED
      after Thu Jan  1 01:00:00 1970

00008 : /opt/PV5.1/prog/au/bin/csi_filterAU : REMOVED
      after Thu Jan  1 01:00:00 1970

00009 : /opt/PV5.1/prog/au/bin/Combine_Spec : REMOVED
      after Thu Jan  1 01:00:00 1970

00010 : /opt/PV5.1/prog/au/bin/pvplot : REMOVED
      after Thu Jan  1 01:00:00 1970

00011 : /opt/PV5.1/prog/au/bin/gen_lut : REMOVED
      after Thu Jan  1 01:00:00 1970

00012 : /opt/PV5.1/prog/au/bin/au_spiraltraj : REMOVED
      after Thu Jan  1 01:00:00 1970

00013 : /opt/PV5.1/prog/au/bin/spi_au : REMOVED
      after Thu Jan  1 01:00:00 1970
```



```
00014 : /opt/PV5.1/prog/au/bin/csi_copy.au : REMOVED
after Thu Jan  1 01:00:00 1970

00015 : /opt/PV5.1/prog/au/bin/SvRxAllTest : REMOVED
after Thu Jan  1 01:00:00 1970

00016 : /opt/PV5.1/prog/au/bin/SvB00ffsetAu : REMOVED
after Thu Jan  1 01:00:00 1970

00017 : /opt/PV5.1/prog/au/bin/au_polar : REMOVED
after Thu Jan  1 01:00:00 1970

00018 : /opt/PV5.1/prog/au/bin/csi_cr.au : REMOVED
after Thu Jan  1 01:00:00 1970

00019 : /opt/PV5.1/prog/au/bin/No0peration : REMOVED
after Thu Jan  1 01:00:00 1970

00020 : /opt/PV5.1/prog/au/bin/pf0bserveGrad : REMOVED
after Thu Jan  1 01:00:00 1970

00021 : /opt/PV5.1/prog/au/bin/CsiSplit3d : REMOVED
after Thu Jan  1 01:00:00 1970

00022 : /opt/PV5.1/prog/au/bin/navig_pf : REMOVED
after Thu Jan  1 01:00:00 1970

00023 : /opt/PV5.1/prog/au/bin/NmrMonitorExport : REMOVED
after Thu Jan  1 01:00:00 1970

00024 : /opt/PV5.1/prog/au/bin/SvRxadDcAdj : REMOVED
after Thu Jan  1 01:00:00 1970

00025 : /opt/PV5.1/prog/au/bin/SvRxDcAdj : REMOVED
after Thu Jan  1 01:00:00 1970

00026 : /opt/PV5.1/prog/au/bin/CsiExtract1dSpc : REMOVED
after Thu Jan  1 01:00:00 1970

00027 : /opt/PV5.1/prog/au/bin/NAV_pressAU : REMOVED
after Thu Jan  1 01:00:00 1970

00028 : /opt/PV5.1/prog/au/bin/CalcLinewidth : REMOVED
after Thu Jan  1 01:00:00 1970

00029 : /opt/PV5.1/prog/au/bin/IntraGateAu : REMOVED
after Thu Jan  1 01:00:00 1970

00030 : /opt/PV5.1/prog/au/bin/DemoFio : REMOVED
after Thu Jan  1 01:00:00 1970
```

```
00031 : /opt/PV5.1/prog/au/bin/csi_autopk.au : REMOVED
      after Thu Jan  1 01:00:00 1970

00032 : /opt/PV5.1/prog/au/bin/SvWobble : REMOVED
      after Thu Jan  1 01:00:00 1970

00033 : /opt/PV5.1/prog/au/bin/OverlayGrid : REMOVED
      after Thu Jan  1 01:00:00 1970

00034 : /opt/PV5.1/prog/au/bin/CsiExtractIdSer : REMOVED
      after Thu Jan  1 01:00:00 1970

00035 : /opt/PV5.1/prog/au/bin/FastmapAu : REMOVED
      after Thu Jan  1 01:00:00 1970

00036 : /opt/PV5.1/prog/au/bin/CsiSplitMSlices : REMOVED
      after Thu Jan  1 01:00:00 1970

00037 : /opt/PV5.1/prog/au/bin/au_epitraj : REMOVED
      after Thu Jan  1 01:00:00 1970

00038 : /opt/PV5.1/prog/au/bin/csi_trans.au : REMOVED
      after Thu Jan  1 01:00:00 1970

00039 : /opt/PV5.1/prog/au/bin/au_spiralregrid : REMOVED
      after Thu Jan  1 01:00:00 1970

00040 : /opt/PV5.1/prog/au/bin/SvCurProbe_au : REMOVED
      after Thu Jan  1 01:00:00 1970

00041 : /opt/PV5.1/prog/au/bin/spiralAU : REMOVED
      after Thu Jan  1 01:00:00 1970

00042 : /opt/PV5.1/prog/au/bin/NmrMonitorAu : REMOVED
      after Thu Jan  1 01:00:00 1970

00043 : /opt/PV5.1/prog/au/bin/csi_save.au : REMOVED
      after Thu Jan  1 01:00:00 1970

00044 : /opt/PV5.1/prog/au/bin/SvRxAllAdj : REMOVED
      after Thu Jan  1 01:00:00 1970

00045 : /opt/PV5.1/prog/au/bin/remove_zipper : REMOVED
      after Thu Jan  1 01:00:00 1970

00046 : /opt/PV5.1/cronfile.nmrso.orig : MODIFIED
      last modification at Fri Aug  4 10:49:17 2017
```





Caldrà comprovar els fitxers que no s'han trobat o que s'han modificat

La comanda 'source' no existeix al shell dash

Els primers intents d'executar el ParaVision no han funcionat, de vegades amb missatges d'error que apuntaven a una instal·lació incompleta del ParaVision i/o del TopSpin, i que suggerien córrer de nou els scripts d'instal·lació `installpv` i/o `installnmr`. Però per més que els he executat amb diferents opcions, el resultat ha estat sempre el mateix,

```
root@cie-50-189:/opt/PV5.1# /opt/PV5.1/pv

ParaVision Home Directory points to /opt/PV5.1
TopSpin Home Directory points to
Hit <ENTER> to continue ...
Not equal, installpv possibly not yet done!
ParaVision cannot be started. Press the return key to continue:
```

Finalment, quan he provat d'executar directament el script `/opt/PV5.1/prog/bin/topspin`, he obtingut un missatge d'error informatiu,

```
root@cie-50-189:/opt/PV5.1# ./topspin
./topspin: 115: ./topspin: source: not found
./topspin: Error: Cannot find script './prog/bin/funclib.sh'
Your TopSpin installation is probably corrupted.
You have to run 'installnmr'.

Hit <ENTER> to continue ...
```

on el missatge `./topspin: 115: ./topspin: source: not found` m'ha dut a comprovar quin shell s'estava emprant,

```
root@cie-50-189:/opt/PV5.1# ls -l /bin/sh
lrwxrwxrwx 1 root root 4 Nov  8 2014 /bin/sh -> dash
```

i a trobar que la comanda `source` no està disponible al shell `dash`,

- [Dash doesn't understand "source"](#)
- [source command not found in sh shell](#)
- [Error message 'source: not found' when running a script](#)

i que **la solució** es substituir la comanda `source <filename>` per la seva equivalent a `dash`, el punt: `. <filename>`

Afegir sermnadmin al grup nmrsu

Un cop resolt el problema amb la comanda `source`, torno a provar d'engegar el ParaVision, i aquest

cop em dona un error diferent:

```
sermnadmin@sermn115:/opt/PV5.1$ ./pv
id: sermnadm: no such user

*****
ERROR    (Fri Aug  4 15:52:57 2017)
*****
The user sermnadm does not belong to the primary group of the NMR Superuser
nmrsu. This will lead to potential permission problems. Please add the
primary group of nmrsu to the group list of user sermnadm.
```

Afegeixo *sermnadmin* al grup *nmrsu*, però el programa continua escurçant *sermnadmin* en *sermnadm* i com que no troba que pertanyi al grup *nmrsu*, el problema persisteix.

Corregir la truncació de sermnadmin en sermnadm

Amb l'ajut de la comanda `strace -f -e execve /opt/PV5.1/pv` trobo que l'error s'origina al fitxer *~paravision/prog/bin/startpv*, més concretament a la *Bruker Medical ParaVision Perl library*. Després d'examinar el fitxer *~paravision/perl/lib/perl5/Bruker/Medical/PvUtil.pm* trobo que la causa del problema està la funció `GetUser()`, on es fa servir la funció `POSIX::cuserid()`, la qual deu tornar el nom d'usuari truncat a 8 caràcters. Per resoldre el problema substitueixo la funció `cuserid()` per la resposta més recomanada a la pregunta [How can I get name of the user executing my Perl script?](#)

```
#-----
# function:      GetUser
# returns the user name of the user who started the script
# parameters:   none
# returns local user name
#-----
sub GetUser
{
    if (GetOperatingSystem() eq 'Windows_NT')
    {
        eval 'use Win32';
        return Win32::LoginName;
    }
    else
    {
        # 20180805 - MCE - POSIX::cuserid() REPLACED
        # POSIX::cuserid() replaced because it seems to truncate the
        # eight characters causing ParaVision to abort at start-up whenever
        # the
        # username is longer than 8 chars. I apply the recommended answer
        from
```

```
#
https://stackoverflow.com/questions/1378221/how-can-i-get-name-of-the-user-executing-my-perl$
#
## return POSIX::cuserid();
my $username = $ENV{LOGNAME} || $ENV{USER} || getpwuid($<);
return $username;
}
}
```

Amb això aconseguixo que finalment s'executi el programa.

Instal·lació de biblioteques addicionals - 1a part

libomniORB4, libomniDynamic4 i libomnithread

Al següent intent d'executar ParaVision dona un error perquè no troba unes biblioteques relacionades amb el CORBA,

```
nmrsu@sermn115:/opt/PV5.1$ ldd /opt/PV5.1/prog/bin/pvcmd
linux-gate.so.1 (0xf77c9000)
libomniORB4.so.0 => not found
libomniDynamic4.so.0 => not found
libomnithread.so.3 => not found
libpthread.so.0 => /lib/i386-linux-gnu/i686/cmov/libpthread.so.0
(0xf778c000)
libpcre.so.0 => not found
libdl.so.2 => /lib/i386-linux-gnu/i686/cmov/libdl.so.2 (0xf7787000)
librt.so.1 => /lib/i386-linux-gnu/i686/cmov/librt.so.1 (0xf777e000)
libstdc++.so.6 => /usr/lib32/libstdc++.so.6 (0xf768b000)
libm.so.6 => /lib/i386-linux-gnu/i686/cmov/libm.so.6 (0xf7645000)
libgcc_s.so.1 => /lib/i386-linux-gnu/libgcc_s.so.1 (0xf7628000)
libc.so.6 => /lib/i386-linux-gnu/i686/cmov/libc.so.6 (0xf747b000)
/lib/ld-linux.so.2 (0x565f5000)
```

Instal·lo els paquets que contenen les biblioteques que manquen:

- libomniorb4-1:i386 que conté libomniORB4.so.1
 - caldrà crear un enllaç simbòlic de nom libomniORB4.so.0
 - arrossega el paquet libomnithread3c2:i386 que conté libomnithread.so.3
- libpcre:i386 que conté libpcre.so.3
 - caldrà crear un enllaç simbòlic de nom libpcre3.so.0

i creo un enllaça simbòlic pel cas de la biblioteca libomniDynamic4.so.0 que ja està instal·lada,

```
root@sermn115:/opt/PV5.1/prog/bin# apt-get install libomniorb4-1:i386
Reading package lists... Done
Building dependency tree
```

```
Reading state information... Done
The following package was automatically installed and is no longer required:
  libgconf2-4
Use 'apt-get autoremove' to remove it.
The following extra packages will be installed:
  libomnithread3c2:i386
The following NEW packages will be installed:
  libomniorb4-1:i386 libomnithread3c2:i386
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 0 B/1,495 kB of archives.
After this operation, 4,566 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Selecting previously unselected package libomnithread3c2.
(Reading database ... 160073 files and directories currently installed.)
Preparing to unpack .../libomnithread3c2_4.1.6-2_i386.deb ...
Unpacking libomnithread3c2 (4.1.6-2) ...
Selecting previously unselected package libomniorb4-1.
Preparing to unpack .../libomniorb4-1_4.1.6-2_i386.deb ...
Unpacking libomniorb4-1 (4.1.6-2) ...
Setting up libomnithread3c2 (4.1.6-2) ...
Setting up libomniorb4-1 (4.1.6-2) ...
Processing triggers for libc-bin (2.19-18+deb8u10) ...

root@sermn115:/opt/PV5.1/prog/bin# ln -s /usr/lib/libomniORB4.so.1.6
/usr/lib/libomniORB4.so.0
root@sermn115:/opt/PV5.1/prog/bin# ls -l /usr/lib/libomniORB4*
lrwxrwxrwx 1 root root      27 Aug  4 16:42 /usr/lib/libomniORB4.so.0 ->
/usr/lib/libomniORB4.so.1.6
lrwxrwxrwx 1 root root      18 Mar  6 2012 /usr/lib/libomniORB4.so.1 ->
libomniORB4.so.1.6
-rw-r--r-- 1 root root 1609476 Mar  6 2012 /usr/lib/libomniORB4.so.1.6

root@sermn115:/opt/PV5.1/prog/bin# ln -s /usr/lib/libomniDynamic4.so.1.6
/usr/lib/libomniDynamic4.so.0
root@sermn115:/opt/PV5.1/prog/bin# ls -l /usr/lib/libomniDynamic4.so*
lrwxrwxrwx 1 root root      31 Aug  4 16:43 /usr/lib/libomniDynamic4.so.0 ->
/usr/lib/libomniDynamic4.so.1.6
lrwxrwxrwx 1 root root      22 Mar  6 2012 /usr/lib/libomniDynamic4.so.1 ->
libomniDynamic4.so.1.6
-rw-r--r-- 1 root root 2372640 Mar  6 2012 /usr/lib/libomniDynamic4.so.1.6

root@sermn115:/home/sermnadmin# ln -s /lib/i386-linux-gnu/libpcre.so.3.13.1
/lib/i386-linux-gnu/libpcre.so.0
root@sermn115:/home/sermnadmin# ls -l /lib/i386-linux-
gnu/libpcre.so*lrwxrwxrwx 1 root root      37 Aug  4 16:59 /lib/i386-linux-
gnu/libpcre.so.0 -> /lib/i386-linux-gnu/libpcre.so.3.13.1
lrwxrwxrwx 1 root root      17 Mar 26 2016 /lib/i386-linux-gnu/libpcre.so.3
-> libpcre.so.3.13.1
-rw-r--r-- 1 root root 464180 Mar 26 2016 /lib/i386-linux-
gnu/libpcre.so.3.13.1
```

```
nmrsu@sermn115:/opt/PV5.1$ ldd ./prog/bin/pvcm
linux-gate.so.1 (0xf773a000)
libomniORB4.so.0 => /usr/lib/libomniORB4.so.0 (0xf758e000)
libomniDynamic4.so.0 => /usr/lib/libomniDynamic4.so.0 (0xf734a000)
libomnithread.so.3 => /usr/lib/libomnithread.so.3 (0xf7343000)
libpthread.so.0 => /lib/i386-linux-gnu/i686/cmov/libpthread.so.0
(0xf7327000)
libpcre.so.0 => /lib/i386-linux-gnu/libpcre.so.0 (0xf72b4000)
libdl.so.2 => /lib/i386-linux-gnu/i686/cmov/libdl.so.2 (0xf72af000)
librt.so.1 => /lib/i386-linux-gnu/i686/cmov/librt.so.1 (0xf72a6000)
libstdc++.so.6 => /usr/lib/i386-linux-gnu/libstdc++.so.6 (0xf71b3000)
libm.so.6 => /lib/i386-linux-gnu/i686/cmov/libm.so.6 (0xf716d000)
libgcc_s.so.1 => /lib/i386-linux-gnu/libgcc_s.so.1 (0xf7150000)
libc.so.6 => /lib/i386-linux-gnu/i686/cmov/libc.so.6 (0xf6fa3000)
/lib/ld-linux.so.2 (0x56646000)
```

Ara que s'han instal·lat les biblioteques que necessita el programa, faig un nou intent d'executar el ParaVision, però dóna un nou error,

```
sermnadmin@sermn115:/opt/PV5.1$ ./pv
/opt/PV5.1/prog/bin/scripts/./topspin: 1:
/opt/PV5.1/prog/bin/scripts/./topspin: /opt/PV5.1/pathScript: not found
/opt/PV5.1/prog/bin/scripts/./topspin: 1:
/opt/PV5.1/prog/bin/scripts/./topspin: /opt/PV5.1/pathScript: not found
/opt/PV5.1/prog/bin/pvcm: symbol lookup error: /opt/PV5.1/prog/bin/pvcm:
undefined symbol: _ZN4omni11omniORB_4_0E
```

ERROR (Sun Aug 6 17:17:18 2017)

Cannot access the CORBA Name Service though it is running. You may restart the CORBA Name Service by entering the command (as user root)

```
/etc/init.d/corbaNameService.default restart
```

Comprovo amb `ldd -d (-d, -data-relocs process data relocations)` quin és el problema,

```
sermnadmin@sermn115:/opt/PV5.1/prog/bin$ ldd -d ./pvcm
linux-gate.so.1 (0xf770b000)
libomniORB4.so.0 => /usr/lib/libomniORB4.so.0 (0xf755f000)
...
/lib/ld-linux.so.2 (0x565a9000)
undefined symbol: _ZN4omni11omniORB_4_0E (./pvcm)
undefined symbol: _ZTIN14PortableServer19RefCountServantBaseE (./pvcm)
```

i veig que hi ha dos símbols a l'executable pvcm que no es troben en cap de les biblioteques dinàmiques enllaçades. Examino les biblioteques, i trobo que el símbol està disponible a libomniORB4.so.0,

```
$ readelf --symbols /usr/lib/libomniORB4.so.0 | grep ZN4omni11omniORB
```

5428: 001879c8 4 OBJECT GLOBAL DEFAULT 26 _ZN4omni11omniORB_4_1E

però amb un número de versió superior: **4_1E** en comptes de **4_0E**. Com que un canvi de versió vol dir que es perd la compatibilitat cap enrere, hauré de localitzar la versió de la biblioteca amb el símbol correcte, i instal·lar-la.

Downgrading libomniORB4

Em descarrego els paquets *libomniORB4** de les versions anteriors fins trobar el que conté la biblioteca *libomniORB4.so.0*: *libomniorb4c2_4.0.6-2.1_i386.deb* de la versió Debian 4.0 (Etch) de setembre de 2007.

Per instal·lar aquest paquet i les seves dependències, segueixo les instruccions i recomanacions que trobo als enllaços:

- [Distribution Archives - Debian archive](#)
- [Debian: Is it possible/safe to install packages from an older version of the repository?](#)
- [How to downgrade a package via apt-get?](#)

Començo per crear un fitxer amb la configuració per accedir al dipòsit de paquets de Debian Archive,

```
root@sermn115:/etc/apt/sources.list.d# cat 6-etch.list
# DEBIAN ETCH FROM DEBIAN ARCHIVE

deb http://archive.debian.org/debian/ etch contrib main non-free
```

i tot seguit executo la comanda `apt-get update` per afegir els paquets de la versió *Etch* a la llista de paquets disponibles, finalment instal·lo el paquet de la versió antiga,

```
root@sermn115:/etc/apt/sources.list.d# apt-get -t etch install
libomniORB4:i386
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'libomniorb4c2:i386' instead of 'libomniorb4:i386'
The following extra packages will be installed:
  libssl0.9.8:i386
The following NEW packages will be installed:
  libomniorb4c2:i386 libssl0.9.8:i386
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 3,864 kB of archives.
After this operation, 10.2 MB of additional disk space will be used.
Do you want to continue? [Y/n] n
Abort.

root@sermn115:/etc/apt/sources.list.d# apt-get -t etch install
libomniORB4:i386
Reading package lists... Done
```



```

Building dependency tree
Reading state information... Done
Note, selecting 'libomniorb4c2:i386' instead of 'libomniorb4:i386'
The following extra packages will be installed:
  libssl0.9.8:i386
The following NEW packages will be installed:
  libomniorb4c2:i386 libssl0.9.8:i386
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 3,864 kB of archives.
After this operation, 10.2 MB of additional disk space will be used.
Do you want to continue? [Y/n]
WARNING: The following packages cannot be authenticated!
  libssl0.9.8:i386 libomniorb4c2:i386
Install these packages without verification? [y/N] y
Get:1 http://archive.debian.org/debian/ etch/main libssl0.9.8 i386
0.9.8c-4etch9 [2,722 kB]
Get:2 http://archive.debian.org/debian/ etch/main libomniorb4c2 i386
4.0.6-2.1 [1,142 kB]
Fetched 3,864 kB in 1s (2,825 kB/s)
Preconfiguring packages ...
Selecting previously unselected package libssl0.9.8.
(Reading database ... 160171 files and directories currently installed.)
Preparing to unpack .../libssl0.9.8_0.9.8c-4etch9_i386.deb ...
Unpacking libssl0.9.8 (0.9.8c-4etch9) ...
Selecting previously unselected package libomniorb4c2.
Preparing to unpack .../libomniorb4c2_4.0.6-2.1_i386.deb ...
Unpacking libomniorb4c2 (4.0.6-2.1) ...
Setting up libssl0.9.8 (0.9.8c-4etch9) ...
Setting up libomniorb4c2 (4.0.6-2.1) ...
Processing triggers for libc-bin (2.19-18+deb8u10) ...

```

Comprovo que efectivament s'hagi instal·lat la biblioteca que necessita el programa pvcmd,

```

root@sermn115:/usr/lib# ls -l libomniORB*
lrwxrwxrwx 1 root root      18 Aug 28  2006 libomniORB4.so.0 ->
libomniORB4.so.0.6
-rw-r--r-- 1 root root 1436828 Aug 28  2006 libomniORB4.so.0.6

```

i que contingui la versió correcta **4_0E** del símbol ZN4omni11omniORB,

```

# readelf --symbols /usr/lib/libomniORB4.so.0 | grep ZN4omni11omniORB
3581: 0015e90c      4 OBJECT GLOBAL DEFAULT 23 _ZN4omni11omniORB_4_0E

```

Instal·lació de biblioteques addicionals - 2a part

Ara que s'ha resolt aquesta dependència del programa pvcmd, provo a executar el ParaVision, però quan comprova les dependències dels programes de TopSpin/ParaVision, encara troba a faltar unes quantes biblioteques (veure apartat SUMMARY OF UNSATISFIED LIBRARIES) i alguns programes (veure apartat SUMMARY OF UNSATISFIED SOFTWARE),

```
sermnadmin@sermn115:/opt/PV5.1$ ./pv
/opt/PV5.1/prog/bin/scripts/./topspin: 1:
/opt/PV5.1/prog/bin/scripts/./topspin: /opt/PV5.1/pathScript: not found
/opt/PV5.1/prog/bin/scripts/./topspin: 1:
/opt/PV5.1/prog/bin/scripts/./topspin: /opt/PV5.1/pathScript: not found
Checking dependencies (only once), please be patient ... :
GetOpenLibraryDependencies() : Checking in /opt/PV5.1/prog/mod ...
/opt/PV5.1/topspin: 1: /opt/PV5.1/topspin: /opt/PV5.1/pathScript: not found
...
/opt/PV5.1/topspin: 1: /opt/PV5.1/topspin: /opt/PV5.1/pathScript: not found
GetOpenLibraryDependencies() : Checking in /opt/PV5.1/prog/bin ...
/opt/PV5.1/topspin: 1: /opt/PV5.1/topspin: /opt/PV5.1/pathScript: not found
...
/opt/PV5.1/topspin: 1: /opt/PV5.1/topspin: /opt/PV5.1/pathScript: not found
GetOpenPackageDependencies() :
Searching for program convert ...
Searching for file pattern /usr/include/*/pcre.h ...
Searching for program latex ...

ParaVision cannot be started due to the following unsatisfied dependencies :
SUMMARY OF UNSATISFIED LIBRARIES :
Module /opt/PV5.1/prog/mod/dirdata says : missing libPath.so => not found
Module /opt/PV5.1/prog/mod/shimTool says : missing libXt.so.6 => not found
Module /opt/PV5.1/prog/bin/checkOpenGLVersions says : missing libGL.so.1
=> not found
...
Module /opt/PV5.1/prog/mod/edtg says : missing libPath.so => not found
SUMMARY OF UNSATISFIED SOFTWARE :
Missing PATTERN:/usr/include/*/pcre.h. Please install package pcre-devel.
Missing PROG:latex. Please install package tetex/latex.

++++
INFO      (Sun Aug  6 19:18:31 2017)
++++
You may skip this test by starting ParaVision with './pv -n'
```

/opt/PV5.1/pathScript: not found

El primer error és */opt/PV5.1/pathScript: not found* i comprovo que es deu a que l'enllaç existent s'ha creat en minúscules (pathscript). Corregixo el nom (pathScript) i quan torno a executar ParaVision ja només es queixa de les llibreries que no formen part de ParaVision i que no es troben ni a *~paravision/prog/shlib* ni a *~paravision/prog/pvshlib*.

Programes no trobats

Per resoldre el problema amb els programes no trobats instal·lo els paquets

- libpcre3-dev:i386, que instal·la libpcrecpp0:i386; i
- texlive en comptes de tetex/latex

Biblioteques no trobades

Les biblioteques següents no hi són al sistema i cal instal·lar la seva versió de 32-bits:

- libXt.so.6 - instal·lar el paquet libxt6:i386 ✓
 - `# apt-get install -t jessie-backports libxt6:i386`
- libXpm.so.4 - instal·lar el paquet libxpm4:i386 ✓
 - `# apt-get install -t jessie-backports libxpm4:i386`
- libXmu.so.6 - instal·lar el paquet libxmu6:i386 ✓
 - `# apt-get install -t jessie-backports libxmu6:i386`
- libXp.so.6 - instal·lar el paquet libxp6:i386 ✓
 - `# apt-get install -t jessie-backports libxp6:i386`

Execució de ParaVision com a nmrsu

Un cop resolts instal·lats els programes i biblioteques que reclamava ParaVision, provo a executar el programa, i aquest cop ja no dona cap error, però diu que la primera vegada que s'executa el programa cal fer-ho com a NMR Superuser,

```
sermnadmin@sermn115:/opt/PV5.1$ ./pv
Available disk memory for ParaVision is 40Gbytes. The partition load is 59%

Network Consistency Check : seems to be OK, ParaVision can be started

*****
ERROR    (Mon Aug  7 14:24:31 2017)
*****
The first start of ParaVision includes the spectrometer configuration which
has not yet been accomplished. It must be performed as NMR Superuser.
Please restart ParaVision with NMR Superuser rights (either re-login as
user <Nmr
Superuser> or execute the shell command 'su <Nmr Superuser>')
```

Així doncs, surto de la sessió de *sermnadmin* i obro una sessió com a *nmrsu*.

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