

Instal·lació de CentOS 7 per l'Avance III 400 MHz SB

ISO d'instal·lació

Instal·lo el sistema operatiu CentOS 7.9-2009 de 2021-11-12 a partir de la imatge ISO CentOS-7-x86_64-DVD-2009.iso descarregada de la [rèplica del magatzem de CentOS al CSUC](#),

```
# cd /home/miquel/Informatica/CentOS/
# wget http://ftp.csuc.cat/centos/7/isos/x86_64/CentOS-7-x86_64-DVD-2009.iso
--2021-08-18 11:31:58--
http://ftp.csuc.cat/centos/7/isos/x86_64/CentOS-7-x86_64-DVD-2009.iso
Resolving ftp.csuc.cat (ftp.csuc.cat)... 84.88.0.29
Connecting to ftp.csuc.cat (ftp.csuc.cat)|84.88.0.29|:80... connected.
HTTP request sent, awaiting response... 200 OK
Length: 4712300544 (4.4G) [application/octet-stream]
Saving to: 'CentOS-7-x86_64-DVD-2009.iso'

CentOS-7-x86_64-DVD-2009.iso
100%[=====>] 4.39G
8.16MB/s in 7m 15s

2021-08-18 11:39:13 (10.3 MB/s) - 'CentOS-7-x86_64-DVD-2009.iso' saved
[4712300544/4712300544]
```

i copiada amb dd a un pendrive USB-3

```
# dd if=CentOS-7-x86_64-DVD-2009.iso of=/dev/sdg
9203712+0 records in
9203712+0 records out
4712300544 bytes (4.7 GB) copied, 817.294 s, 5.8 MB/s
```

Malauradament, el primer cop que intento instal·lar CentOS, el programa d'instal·lació dona un error al verificar el pendrive i s'interromp la instal·lació. Per descartar un problema al fitxer ISO descarregat, calculo la signatura SHA-256 del fitxer

```
c# sha256sum CentOS-7-x86_64-DVD-2009.iso
e33d7b1ea7a9e2f38c8f693215dd85254c3a4fe446f93f563279715b68d07987 CentOS-7-
x86_64-DVD-2009.iso
```

i comprovo que coincideix amb la signatura al fitxer sha256sum.txt descarregat de la rèplica al CSUC

```
# cat sha256sum.txt
689531cce9cf484378481ae762fae362791a9be078fda10e4f6977bf8fa71350 CentOS-7-
x86_64-Everything-2009.iso
```

```
b79079ad71cc3c5ceb3561fff348a1b67ee37f71f4cddfec09480d4589c191d6 CentOS-7-x86_64-NetInstall-2009.iso
07b94e6b1a0b0260b94c83d6bb76b26bf7a310dc78d7a9c7432809fb9bc6194a CentOS-7-x86_64-Minimal-2009.iso
e33d7b1ea7a9e2f38c8f693215dd85254c3a4fe446f93f563279715b68d07987 CentOS-7-x86_64-DVD-2009.iso
```

de forma que l'error es deu haver originat al fer la còpia amb dd. Per evitar que es torni a produir, **instal·lo dcfldd i dc3dd**,

```
# apt install dcfldd
# apt install dc3dd
```

unes versions millorades de dd que verifiquen que la còpia coincideixi amb l'original, i faig servir dc3dd per fer la còpia sense errors,

```
# dc3dd if=CentOS-7-x86_64-DVD-2009.iso of=/dev/sdg hash=sha256 hlog=centos-usb-sha256sum.log log=centos-usb.log verb=on

dc3dd 7.2.641 started at 2021-08-18 13:22:24 +0200
compiled options:
command line: dc3dd if=CentOS-7-x86_64-DVD-2009.iso of=/dev/sdg hash=sha256 hlog=centos-usb-sha256sum.log log=centos-usb.log verb=on
sector size: 512 bytes (assumed)
 4712300544 bytes ( 4.4 G ) copied ( 100% ), 195 s, 23 M/s

input results for file `CentOS-7-x86_64-DVD-2009.iso':
 9203712 sectors in
 e33d7b1ea7a9e2f38c8f693215dd85254c3a4fe446f93f563279715b68d07987 (sha256)

output results for device `/dev/sdg':
 9203712 sectors out

dc3dd completed at 2021-08-18 13:25:38 +0200
```

Finalment, repeteixo el procés d'instal·lació a partir del pendrive i aquest cop el programa d'instal·lació del CentOS s'executa sense errors.

Enllaços d'interès

- [dcfldd - Cerca de Google](#)
- [dcfldd\(1\) - Linux man page](#)
- [dcfldd](#), at Forensics Wiki.
- [dc3dd\(1\) - Linux man page](#)
- [dc3dd | Penetration Testing Tools](#), KALI tools.
- [dc3dd](#), at Forensics Wiki.
- [# Simple Forensics imaging with dd, dc3dd & dcfldd - Forensics Matters](#)

Magatzems (repositories) addicionals

La llista de magatzems actualment configurats és,

```
# yum repolist
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
* base: ftp.csuc.cat
* extras: ftp.csuc.cat
* updates: ftp.csuc.cat
```

repo id	repo name	status
base/7/x86_64	CentOS-7 - Base	10,072
extras/7/x86_64	CentOS-7 - Extras	498
updates/7/x86_64	CentOS-7 - Updates	2,567
repolist: 13,137		

Cal afegir aquests magatzems addicionals: [bruker](#), [elrepo](#) i [epel](#) per tenir la mateixa configuració que als ordinadors dels Avance Neo o de l'Avance III 600 MHz. Les instruccions per afegir-los estan disponibles als seus llocs web i a altres pàgines d'Internet.

- [CentOS 7 TopSpin Installation](#)
- ["The Community Enterprise Linux Repository" \(ELRepo\)](#); i
- [Extra Packages for Enterprise Linux \(EPEL\)](#)

La instal·lació del magatzem EPEL no dona cap problema:

```
# yum install
https://dl.fedoraproject.org/pub/epel/epel-release-latest-7.noarch.rpm
[...]
Installed:
  epel-release.noarch 0:7-13

Complete!
```

i la instal·lació d'ELRepo tampoc,

```
# rpm --import https://www.elrepo.org/RPM-GPG-KEY-elrepo.org
# yum install https://www.elrepo.org/elrepo-release-7.el7.elrepo.noarch.rpm
[...]
Installed:
  elrepo-release.noarch 0:7.0-5.el7.elrepo

Complete!
```

Un cop instal·lats, afegeixo el magatzem de Bruker, i instal·lo els paquets necessaris pel TopSpin i per l'adquisició, així com els paquets dels quals depenen,

```
# yum --nogpgcheck install
https://repo-bbio.bruker.com/CentOS/7/Bruker-Addon/bruker-addon-latest.x86_64.rpm
```

[...]

Installed:

bruker-addon.noarch 0:1.4-0.el7.brk

Complete!

```
# yum install epel-release
```

[...]

Package epel-release-7-13.noarch already installed and latest version
Nothing to do

```
# yum install --enablerepo=bruker bruker-topspin-environ
```

[...]

Resolving Dependencies

--> Running transaction check

---> Package bruker-topspin-environ.x86_64 0:1.0-21.el7.brk will be installed

--> Processing Dependency: xorg-x11-fonts-IS08859-1-75dpi for package: bruker-topspin-environ-1.0-21.el7.brk.x86_64

--> Processing Dependency: xorg-x11-fonts-75dpi for package: bruker-topspin-environ-1.0-21.el7.brk.x86_64

:

---> Package nettle.i686 0:2.7.1-9.el7_9 will be installed

---> Package nettle.x86_64 0:2.7.1-9.el7_9 will be an update

--> Finished Dependency Resolution

Dependencies Resolved

:

Install 1 Package (+161 Dependent packages)

Upgrade (39 Dependent packages)

Total download size: 157 M

Is this ok [y/d/N]: y

Downloading packages:

No Presto metadata available for updates

warning:

/var/cache/yum/x86_64/7/base/packages/ORBit2-2.14.19-13.el7.i686.rpm: Header V3 RSA/SHA256 Signature, key ID f4a80eb5: NOKEY

Public key for ORBit2-2.14.19-13.el7.i686.rpm is not installed

(1/201): ORBit2-2.14.19-13.el7.i686.rpm

| 171 kB 00:00:00

(2/201): PackageKit-gtk3-module-1.1.10-2.el7.centos.i686.rpm

| 12 kB 00:00:00

:

(200/201): systemd-219-78.el7_9.3.x86_64.rpm

```
| 5.1 MB 00:00:01
(201/201): xorg-x11-fonts-IS08859-1-75dpi-7.5-9.el7.noarch.rpm
| 933 kB 00:00:01
-----
-----
Total
9.8 MB/s | 157 MB 00:00:16
Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
Importing GPG key 0xF4A80EB5:
  Userid      : "CentOS-7 Key (CentOS 7 Official Signing Key)
<security@centos.org>"
  Fingerprint: 6341 ab27 53d7 8a78 a7c2 7bb1 24c6 a8a7 f4a8 0eb5
  Package     : centos-release-7-9.2009.0.el7.centos.x86_64 (@anaconda)
  From        : /etc/pki/rpm-gpg/RPM-GPG-KEY-CentOS-7
Is this ok [y/N]: y
Retrieving key from file:///etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-7
Importing GPG key 0x352C64E5:
  Userid      : "Fedora EPEL (7) <epel@fedoraproject.org>"
  Fingerprint: 91e9 7d7c 4a5e 96f1 7f3e 888f 6a2f aea2 352c 64e5
  Package     : epel-release-7-13.noarch (@/epel-release-latest-7.noarch)
  From        : /etc/pki/rpm-gpg/RPM-GPG-KEY-EPEL-7
Is this ok [y/N]: y
Running transaction check
Running transaction test
Transaction test succeeded
Running transaction
  Updating    : libX11-common-1.6.7-3.el7_9.noarch
1/240
  Installing  : kernel-headers-3.10.0-1160.36.2.el7.x86_64
2/240
  Installing  : libgcc-4.8.5-44.el7.i686
3/240
  :
  :
  Installing  : libcanberra-gtk2-0.30-9.el7.i686
200/240
  Installing  : bruker-topspin-environ-1.0-21.el7.brk.x86_64
201/240
      All required 32bit libraries are present
  Cleanup    : libX11-devel-1.6.7-2.el7.x86_64
202/240
  Cleanup    : systemd-sysv-219-78.el7.x86_64
203/240
  :
  :
  Cleanup    : nss-softokn-freebl-3.44.0-8.el7_7.x86_64
239/240
  Cleanup    : glibc-2.17-317.el7.x86_64
240/240
  Verifying  : gnome-vfs2-2.24.4-14.el7.i686
1/240
```

```
Verifying   : gcc-c++-4.8.5-44.el7.x86_64
2/240
:
:
Verifying   : gtk3-immodule-xim-3.22.30-5.el7.x86_64
239/240
Verifying   : mesa-libEGL-18.3.4-10.el7.x86_64
240/240

Installed:
  bruker-topspin-envIRON.x86_64 0:1.0-21.el7.brk

Dependency Installed:
  GConf2.i686 0:3.2.6-8.el7
  ORBit2.i686 0:2.14.19-13.el7
  PackageKit-glib.i686 0:1.1.10-2.el7.centos
  PackageKit-gtk3-module.i686 0:1.1.10-2.el7.centos
  :
  :
  xorg-x11-fonts-IS08859-1-75dpi.noarch 0:7.5-9.el7          xz-
  libs.i686 0:5.2.2-1.el7
  zlib.i686 0:1.2.7-19.el7_9

Dependency Updated:
  freetype.x86_64 0:2.8-14.el7_9.1          glib2.x86_64
  0:2.56.1-9.el7_9          glibc.x86_64 0:2.17-324.el7_9
  glibc-common.x86_64 0:2.17-324.el7_9          gtk3.x86_64
  0:3.22.30-6.el7          gtk3-immodule-xim.x86_64 0:3.22.30-6.el7
  libX11.x86_64 0:1.6.7-3.el7_9          libX11-common.noarch
  0:1.6.7-3.el7_9          libX11-devel.x86_64 0:1.6.7-3.el7_9
  libblkid.x86_64 0:2.23.2-65.el7_9.1          libgudev1.x86_64
  0:219-78.el7_9.3          libmount.x86_64 0:2.23.2-65.el7_9.1
  libsmartcols.x86_64 0:2.23.2-65.el7_9.1          libuuid.x86_64
  0:2.23.2-65.el7_9.1          mesa-libEGL.x86_64 0:18.3.4-12.el7_9
  mesa-libGL.x86_64 0:18.3.4-12.el7_9          mesa-libgbm.x86_64
  0:18.3.4-12.el7_9          mesa-libglapi.x86_64 0:18.3.4-12.el7_9
  nettle.x86_64 0:2.7.1-9.el7_9          nspr.x86_64
  0:4.25.0-2.el7_9          nss-softokn-freebl.x86_64 0:3.53.1-6.el7_9
  nss-util.x86_64 0:3.53.1-1.el7_9          openssl.x86_64
  1:1.0.2k-21.el7_9          openssl-libs.x86_64 1:1.0.2k-21.el7_9
  pulseaudio.x86_64 0:10.0-6.el7_9          pulseaudio-libs.x86_64
  0:10.0-6.el7_9          pulseaudio-libs-glib2.x86_64 0:10.0-6.el7_9
  pulseaudio-module-bluetooth.x86_64 0:10.0-6.el7_9 pulseaudio-module-
x11.x86_64 0:10.0-6.el7_9 pulseaudio-utils.x86_64 0:10.0-6.el7_9
  qt.x86_64 1:4.8.7-9.el7_9          qt-mysql.x86_64
  1:4.8.7-9.el7_9          qt-x11.x86_64 1:4.8.7-9.el7_9
  systemd.x86_64 0:219-78.el7_9.3          systemd-libs.x86_64
  0:219-78.el7_9.3          systemd-python.x86_64 0:219-78.el7_9.3
  systemd-sysv.x86_64 0:219-78.el7_9.3          util-linux.x86_64
```

```
0:2.23.2-65.el7_9.1      zlib.x86_64 0:1.2.7-19.el7_9
```

Complete!

El resultat és ara tenim disponibles els mateixos magatzems que a l'ordinador de l'Avance Neo 500 MHz, i un d'extra que potser no cal i que podríem eliminar: "Bruker-Addon-7 - Public Updates (bruker/7)",

```
# yum repolist
Loaded plugins: fastestmirror, langpacks
Loading mirror speeds from cached hostfile
 * base: ftp.csuc.cat
 * elrepo: mirrors.coreix.net
 * epel: mirror.eixamcoop.cat
 * extras: ftp.csuc.cat
 * updates: ftp.csuc.cat
repo id          repo name
status
base/7/x86_64    CentOS-7 - Base
10,072
bruker/7         Bruker-Addon-7 - Public Updates
110+13
elrepo           ELRepo.org Community Enterprise Linux Repository
- el7            128
epel/x86_64      Extra Packages for Enterprise Linux 7 - x86_64
13,634
extras/7/x86_64  CentOS-7 - Extras
498
updates/7/x86_64 CentOS-7 - Updates
2,567
repolist: 26,899
```

Instal·lació de paquets de Bruker



Desactivació del magatzem Bruker



Actualització del programari instal·lat

Després d'afegir els nous magatzems, actualitzo el programari instal·lat,

```
# yum check-update
Loaded plugins: fastestmirror, langpacks
```

Loading mirror speeds from cached hostfile

epel/x86_64/metalink

| 22 kB 00:00:00

* base: ftp.csuc.cat

* elrepo: ftp.nluug.nl

* epel: mirror.eixamcoop.cat

* extras: ftp.csuc.cat

* updates: ftp.csuc.cat

base

| 3.6 kB 00:00:00

bruker

| 2.9 kB 00:00:00

elrepo

| 3.0 kB 00:00:00

epel

| 4.7 kB 00:00:00

extras

| 2.9 kB 00:00:00

updates

| 2.9 kB 00:00:00

(1/3): epel/x86_64/updateinfo

| 1.0 MB 00:00:00

(2/3): updates/7/x86_64/primary_db

| 9.6 MB 00:00:01

(3/3): epel/x86_64/primary_db

| 6.9 MB 00:00:04

NetworkManager.x86_64

1:1.18.8-2.el7_9

updates

NetworkManager-adsl.x86_64

1:1.18.8-2.el7_9

updates

NetworkManager-bluetooth.x86_64

1:1.18.8-2.el7_9

updates

NetworkManager-glib.x86_64

1:1.18.8-2.el7_9

updates

NetworkManager-libnm.x86_64

1:1.18.8-2.el7_9

updates

NetworkManager-ppp.x86_64

1:1.18.8-2.el7_9

updates

:

:

xorg-x11-drv-ati.x86_64

19.0.1-3.el7_7

updates

xorg-x11-server-Xorg.x86_64

1.20.4-16.el7_9

updates

xorg-x11-server-common.x86_64

1.20.4-16.el7_9

updates

xterm.x86_64

295-3.el7_9.1

updates

Obsoleting Packages

bruker-system-environ.noarch

1.0-5.el7.brk

bruker

okular.x86_64

yum update

Loaded plugins: fastestmirror, langpacks

Loading mirror speeds from cached hostfile

* base: ftp.csuc.cat

* elrepo: mirrors.coreix.net

* epel: mirror.eixamcoop.cat

* extras: ftp.csuc.cat

* updates: ftp.csuc.cat

Resolving Dependencies

--> Running transaction check

---> Package NetworkManager.x86_64 1:1.18.8-1.el7 will be updated

---> Package NetworkManager.x86_64 1:1.18.8-2.el7_9 will be an update

---> Package NetworkManager-ads1.x86_64 1:1.18.8-1.el7 will be updated

---> Package NetworkManager-ads1.x86_64 1:1.18.8-2.el7_9 will be an update

---> Package NetworkManager-bluetooth.x86_64 1:1.18.8-1.el7 will be updated

---> Package NetworkManager-bluetooth.x86_64 1:1.18.8-2.el7_9 will be an update

:
:

--> Running transaction check

---> Package libzip.x86_64 0:0.10.1-8.el7 will be installed

base/7/x86_64/filelists_db

| 7.2 MB 00:00:00

bruker/7/filelists_db

| 26 kB 00:00:00

elrepo/filelists_db

| 35 kB 00:00:00

epel/x86_64/filelists_db

| 12 MB 00:00:01

extras/7/x86_64/filelists_db

| 235 kB 00:00:00

updates/7/x86_64/filelists_db

| 5.5 MB 00:00:00

--> Finished Dependency Resolution

Dependencies Resolved

```

=====
=====
=====
Package                                     Arch
Version                                     Repository
Size
=====
=====
=====

```

Installing:

bruker-system-environ	noarch
1.0-5.el7.brk	bruker
11 k	
replacing okular.x86_64 4.10.5-9.el7	
kernel	x86_64
3.10.0-1160.36.2.el7	updates
50 M	

Updating:

NetworkManager	x86_64
1:1.18.8-2.el7_9	updates
1.9 M	
:	
:	
xorg-x11-server-Xvfb	x86_64
1.20.4-16.el7_9	updates
856 k	
xorg-x11-xbitmaps	noarch
1.1.1-6.el7	base
37 k	
yumex	noarch
3.0.17-1.el7	epel
444 k	

Transaction Summary

```
=====
=====
=====
Install      2 Packages (+76 Dependent packages)
Upgrade    228 Packages
```

Total download size: 602 M
Is this ok [y/d/N]: y

Downloading packages:

No Presto metadata available for updates
(1/306): NetworkManager-adsl-1.18.8-2.el7_9.x86_64.rpm
| 163 kB 00:00:00
(2/306): NetworkManager-1.18.8-2.el7_9.x86_64.rpm
| 1.9 MB 00:00:00
(3/306): NetworkManager-bluetooth-1.18.8-2.el7_9.x86_64.rpm
| 183 kB 00:00:00
:
:
(304/306): xorg-x11-server-Xvfb-1.20.4-16.el7_9.x86_64.rpm
| 856 kB 00:00:00
(305/306): xterm-295-3.el7_9.1.x86_64.rpm
| 456 kB 00:00:00
(306/306): yumex-3.0.17-1.el7.noarch.rpm

| 444 kB 00:00:00

Total

11 MB/s | 602 MB 00:00:55

Running transaction check

Running transaction test

Transaction test succeeded

Running transaction

Updating : coreutils-8.22-24.el7_9.2.x86_64
1/535

Installing : kdesdk-common-4.10.5-8.el7.noarch
2/535

Updating : libldb-1.5.4-2.el7.x86_64
3/535

Updating : python-libs-2.7.5-90.el7.x86_64
4/535

:

:

Updating : bpftool-3.10.0-1160.36.2.el7.x86_64
305/535

Updating : iwl4965-firmware-228.61.2.24-80.el7_9.noarch
306/535

Cleanup : samba-client-4.10.16-5.el7.x86_64
307/535

Cleanup : ipa-client-4.6.8-5.el7.centos.x86_64
308/535

:

:

Cleanup : gd-2.0.35-26.el7.x86_64
534/535

Cleanup : bpftool-3.10.0-1160.el7.x86_64
535/535

Verifying : 1:NetworkManager-tui-1.18.8-2.el7_9.x86_64
1/535

Verifying : 7:device-mapper-event-1.02.170-6.el7_9.5.x86_64
2/535

:

:

Verifying : libstoragegmt-1.8.1-1.el7.x86_64
534/535

Verifying : gnome-settings-daemon-3.28.1-8.el7.x86_64
535/535

Installed:

bruker-system-environ.noarch 0:1.0-5.el7.brk
kernel.x86_64 0:3.10.0-1160.36.2.el7

Dependency Installed:

ImageMagick.x86_64 0:6.9.10.68-5.el7_9 SDL.x86_64 0:1.2.15-17.el7

```
Xaw3d.x86_64 0:1.6.2-4.el7          advancecomp.x86_64 0:1.15-22.el7
  apr.x86_64 0:1.4.8-7.el7          apr-util.x86_64 0:1.5.2-6.el7
compat-libstdc++-33.x86_64 0:3.2.3-72.el7 evince.x86_64 0:3.28.2-10.el7
:
:
  vim-minimal.x86_64 2:7.4.629-8.el7_9
wpa_supplicant.x86_64 1:2.6-12.el7_9.2          xorg-x11-
drv-atl.x86_64 0:19.0.1-3.el7_7
  xorg-x11-server-Xorg.x86_64 0:1.20.4-16.el7_9          xorg-x11-
server-common.x86_64 0:1.20.4-16.el7_9          xterm.x86_64
0:295-3.el7_9.1
```

Replaced:

```
okular.x86_64 0:4.10.5-9.el7
```

Complete!

Llista de paquets instal·lats a l'Avance III 600 MHz

Genero la llista de paquets instal·lats a l'Avance III 600 MHz i la transfereixo al nou ordinador per l'Avance III 400 MHz SB,

```
$ rpm -qa | sort > 20210819-avance3-600-pkglist.txt

$ ls -l 20210819-avance3-600-pkglist.txt
-rw-r--r--. 1 sermnadmin sermnadmin 62040 Aug 19 17:09 20210819-avance3-600-
pkglist.txt

$ wc -l 20210819-avance3-600-pkglist.txt
1850 20210819-avance3-600-pkglist.txt

$ md5sum 20210819-avance3-600-pkglist.txt
bd2abffe1603ef8931125c4c3cc0ce92 20210819-avance3-600-pkglist.txt

$ scp ./20210819-avance3-600-pkglist.txt
sermnadmin@cie-54-214.uab.cat:/home/sermnadmin/Documents
The authenticity of host 'cie-54-214.uab.cat (158.109.54.214)' can't be
established.
ECDSA key fingerprint is SHA256:y5C84bqQupGc03axR4i/nnJs0uJVDlUTlKFHWtGP6a0.
ECDSA key fingerprint is
MD5:f8:55:34:99:a7:ad:67:46:0f:f8:5f:c5:e7:eb:47:14.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'cie-54-214.uab.cat,158.109.54.214' (ECDSA) to
the list of known hosts.
sermnadmin@cie-54-214.uab.cat's password:
20210819-avance3-600-pkglist.txt
```

i faig servir md5sum al nou ordinador per verificar que s'ha transferit correctament,

```
sermnadmin@cie-54-214 Documents]$ md5sum 20210819-avance3-600-pkglist.txt  
bd2abffe1603ef8931125c4c3cc0ce92 20210819-avance3-600-pkglist.txt
```

Llista de paquets instal·lats a l'Avance III 400 MHz SB

Genero la llista de paquets instal·lats a l'Avance III 400 MHz SB per poder-la comparar amb la llista de paquets instal·lats a l'Avance III 600 MHz,

```
$ rpm -qa | sort > 20210819-avance3-400sb-pkglist.txt  
  
$ ls -l 20210819-avance3-400sb-pkglist.txt  
-rw-r--r--. 1 root root 54244 Aug 19 17:30 20210819-avance3-400sb-  
pkglist.txt  
  
$ wc -l 20210819-avance3-400sb-pkglist.txt  
1630 20210819-avance3-400sb-pkglist.txt
```

Com es pot veure, falten per instal·lar uns 120 paquets (1850 - 1630).

(Des)instal·lació de paquets que manquen o sobren

Un cop actualitzat el programari, comparo la llista de paquets instal·lats en aquest ordinador amb la llista de paquets instal·lats a l'ordinador del 600 MHz per instal·lar els que manquen i eliminar els que sobren,

```
# comm -23 20210819-avance3-400sb-pkglist.txt 20210819-avance3-600-  
pkglist.txt > compare-files-only-in-400sb.txt  
# comm -13 20210819-avance3-400sb-pkglist.txt 20210819-avance3-600-  
pkglist.txt > compare-files-only-in-600.txt
```

Llavors genero un llistat que conté els paquets instal·lats només al 600 MHz i afegeixo el seu magatzem d'origen,

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Last update: 2021/08/20 13:45

