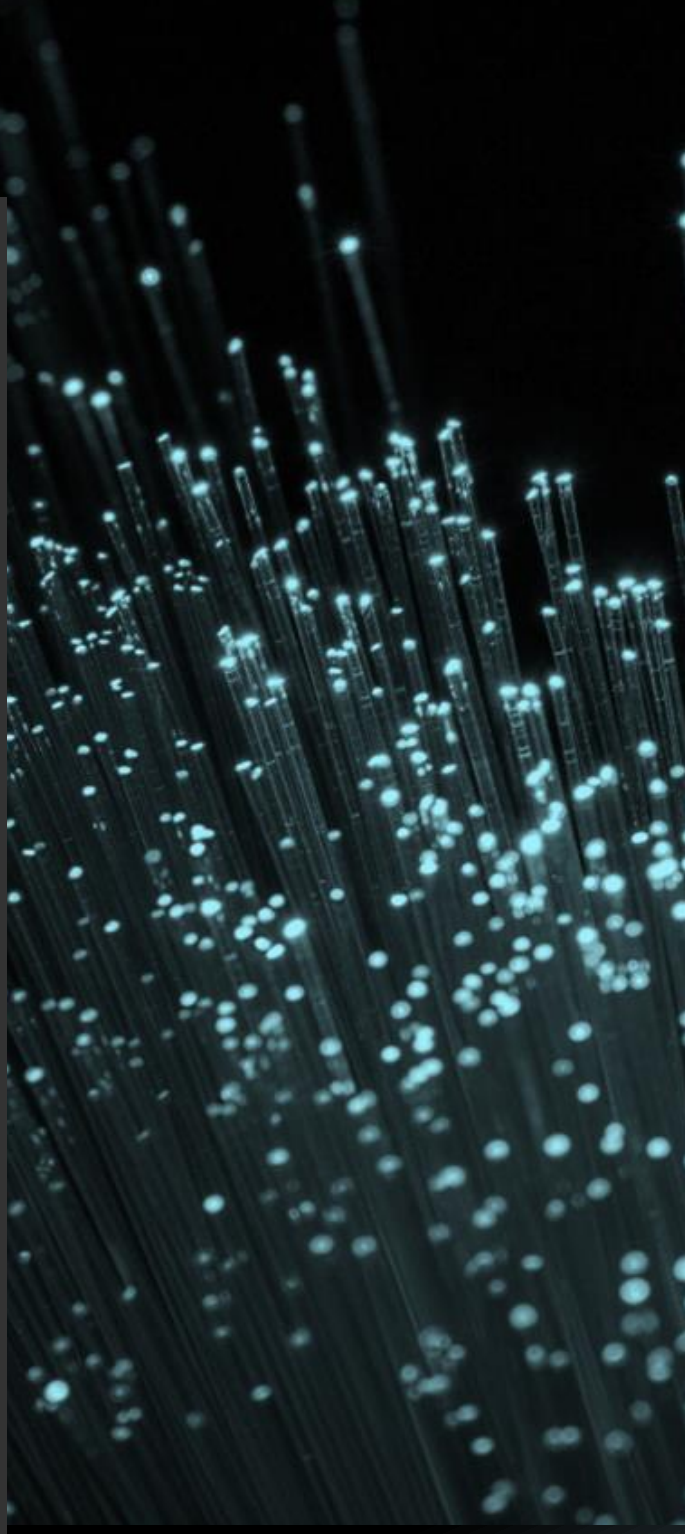

Administración de Sistemas y Redes

Práctica 3

15 FEBRERO

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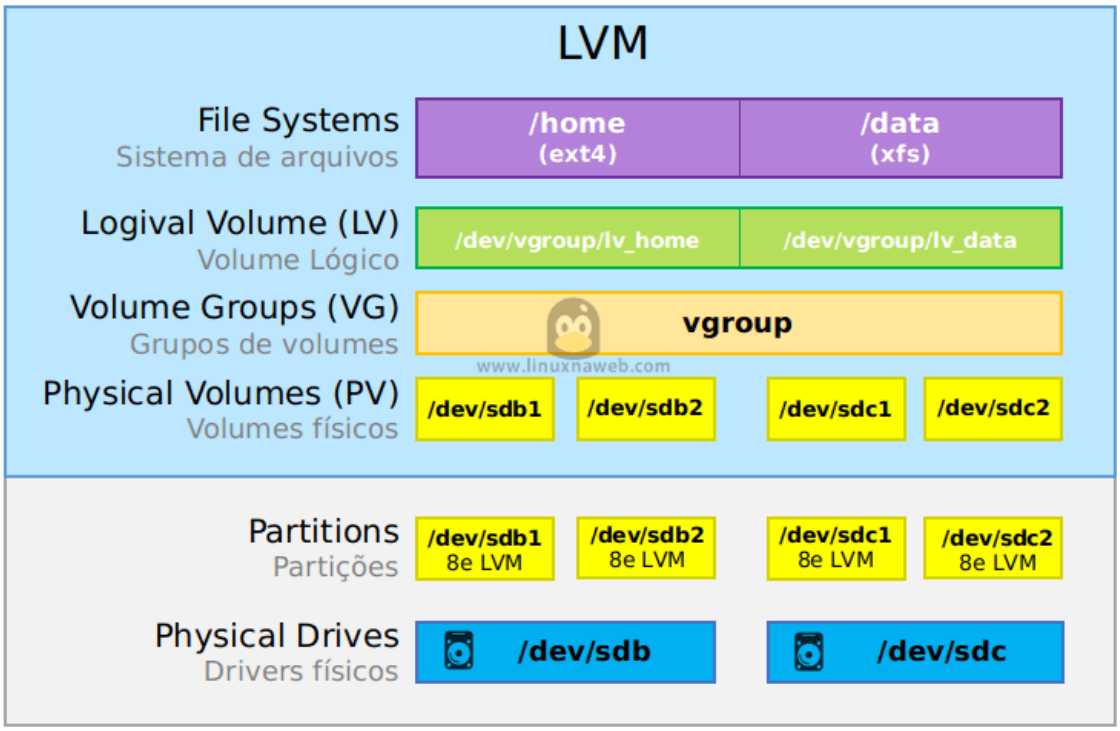
Correo: UO285176@uniovi.es

Índice

LVM en Linux (pequeño esquema para la práctica):



A. Recuperación básica de errores durante el inicio

Si examinamos /boot/loader/entries

```
[UO285176@linux~]-2: ls /boot/loader/entries/
c6560302311f4340935c6d4492d1f926-0-rescue.conf
c6560302311f4340935c6d4492d1f926-5.14.0-162.12.1.el9_1.x86_64.conf
c6560302311f4340935c6d4492d1f926-5.14.0-162.6.1.el9_1.x86_64.conf
[UO285176@linux~]-3:
```

Editamos el más reciente:

```
[UO285176@linux~]-3: ls -l /boot/loader/entries/
total 12
-rw-r--r--. 1 root root 488 feb  1 18:31 c6560302311f4340935c6d4492d1f926-0-rescue.conf
-rw-r--r--. 1 root root 435 feb  1 18:41 c6560302311f4340935c6d4492d1f926-5.14.0-162.12.1.el9_1.x86_64.conf
-rw-r--r--. 1 root root 432 feb  1 18:31 c6560302311f4340935c6d4492d1f926-5.14.0-162.6.1.el9_1.x86_64.conf
[UO285176@linux~]-4: vim  /boot/loader/entries/c6560302311f4340935c6d4492d1f926-5.14.0-162.12.1.el9_1.x86_64.conf _
```

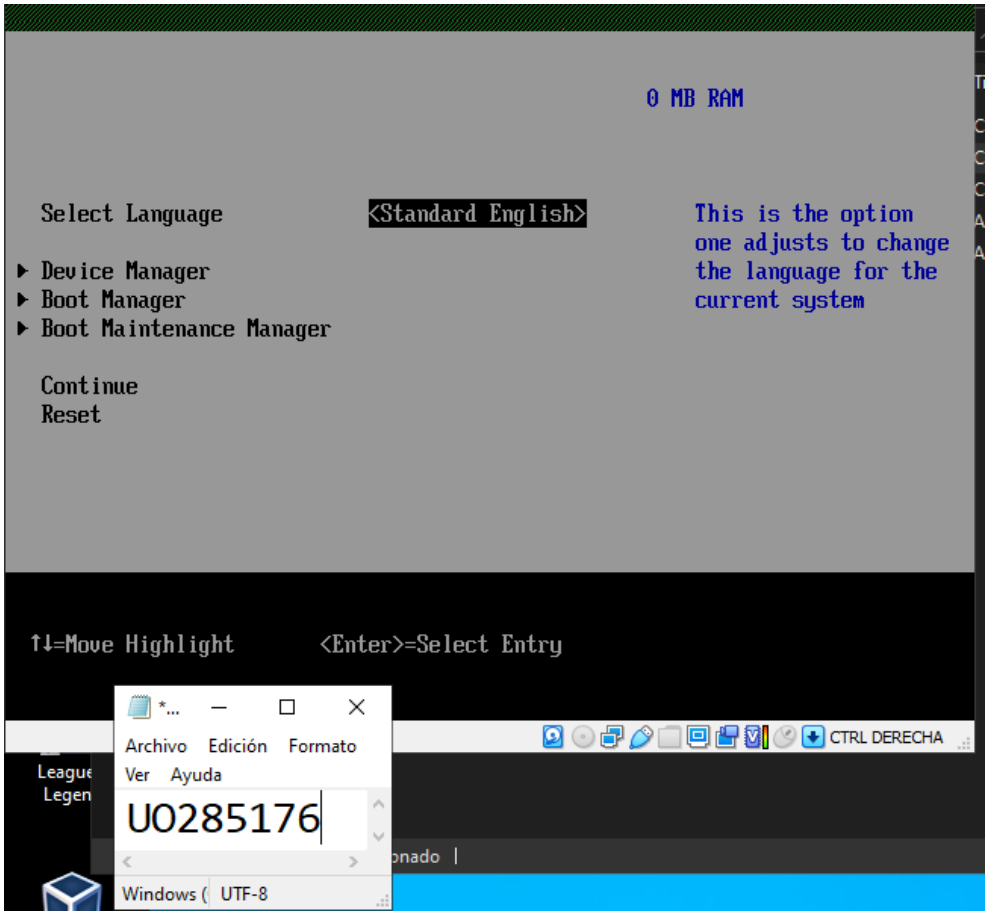
Retocamos vmlinuz por vmlinux:

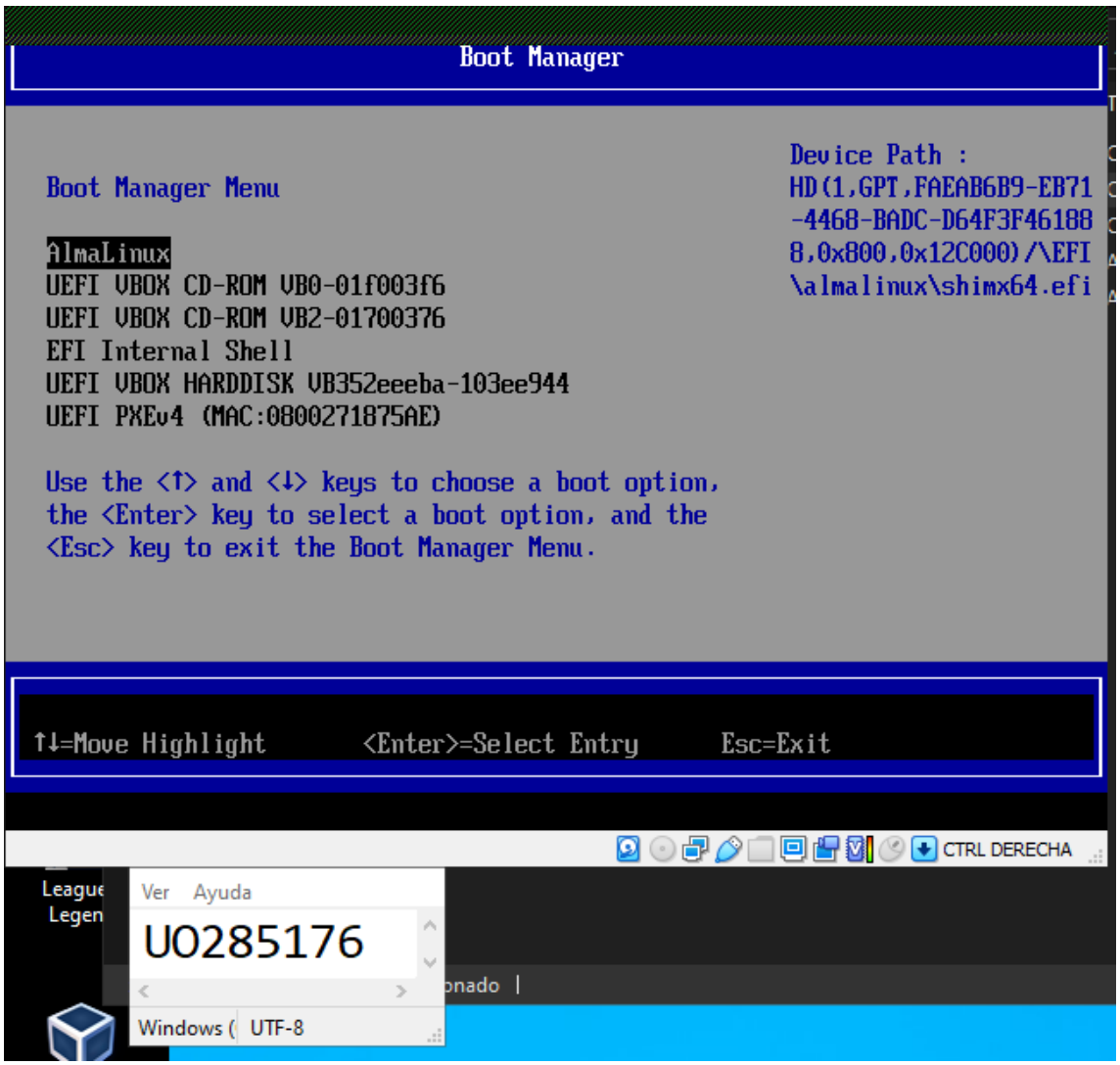
```
version 5.14.0-162.12.1.el9_1.x86_64
linux /vmlinux-5.14.0-162.12.1.el9_1.x86_64
initrd /initramfs-5.14.0-162.12.1.el9_1.x86_64.img
options root=/dev/mapper/almalinux-root ro crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M resume=/dev/mapper/almalinux-swa
.lv=almalinux/root rd.lvm.lv=almalinux/swap
grub_users $grub_users
grub_arg --unrestricted
grub_class almalinux
~
~
```

Comprobamos que no arranca:

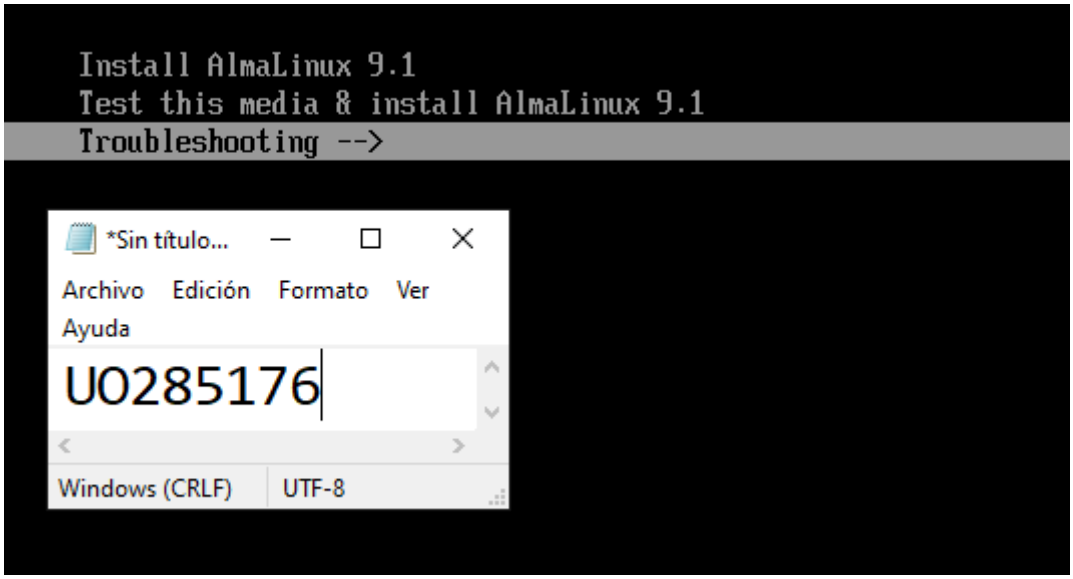
```
error: ../../grub-core/fs/fshelp.c:257:file `/vmlinux-5.14.0-162.12.1.el9_1.x86_64' not found.
error: ../../grub-core/loader/i386/efi/linux.c:259:you need to load the kernel first.

Press any key to continue..._
```

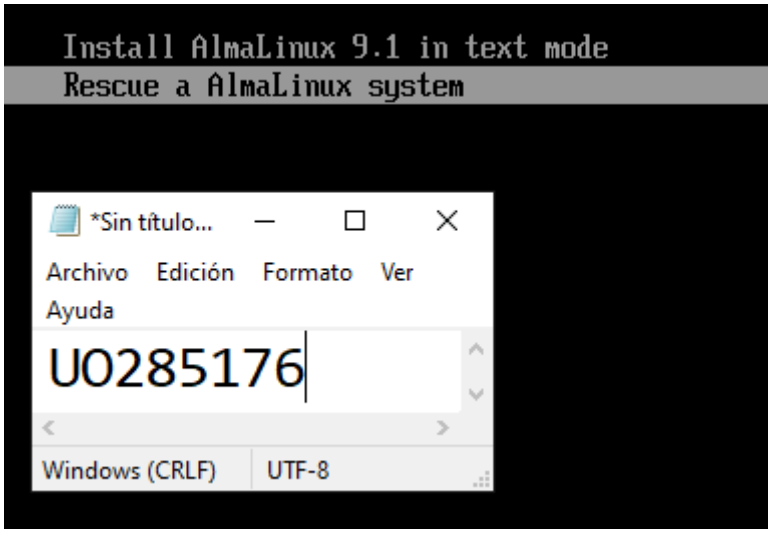
Arrancamos en modo de recuperación:

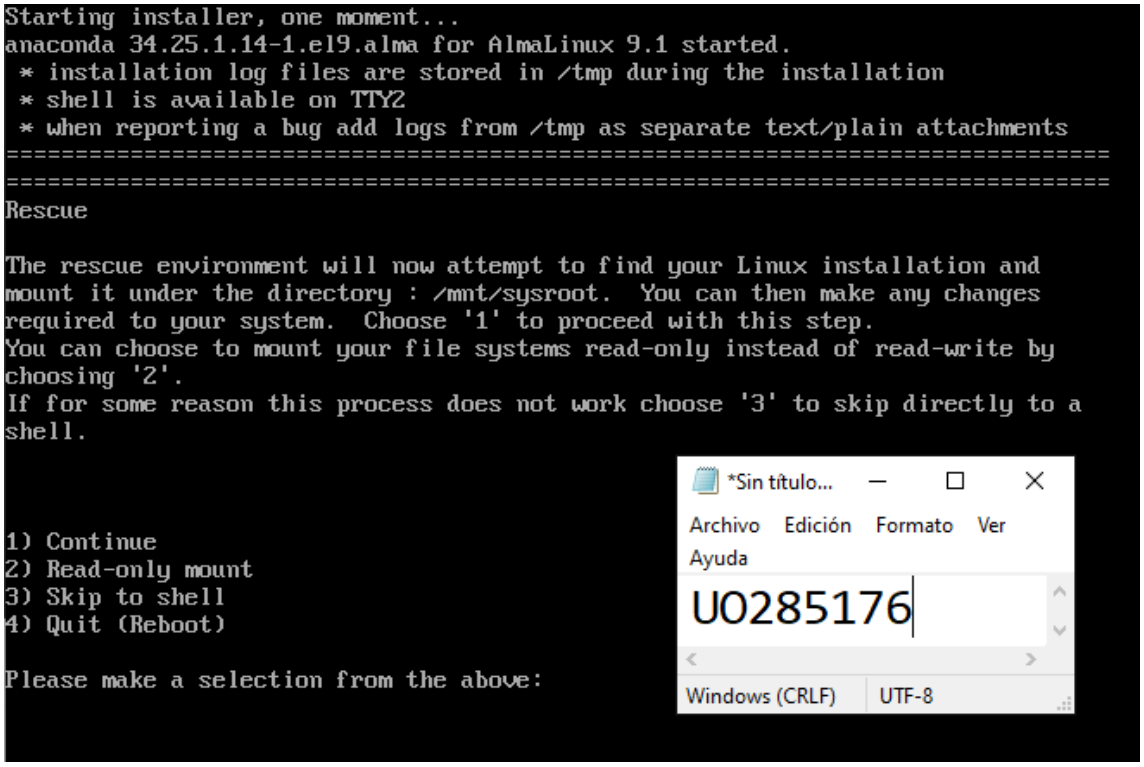

0 MB RAM
Select Language
<Standard English>
This is the option one adjusts to change the language for the current system
Device Manager
Boot Manager
Boot Maintenance Manager
Continue
Reset
↑↓=Move Highlight
<Enter>=Select Entry
Archivo Edición Formato
Ver Ayuda
UO285176
Windows (UTF-8
CTRL DERECHA


Boot Manager
Boot Manager Menu
AlmaLinux
UEFI VBOX CD-ROM VB0-01f003f6
UEFI VBOX CD-ROM VB2-01700376
EFI Internal Shell
UEFI VBOX HARDDISK VB352eeeba-103ee944
UEFI PXEv4 (MAC:0800271875AE)
Device Path :
HD(1,GPT,FAEAB6B9-EB71-4468-BADC-D64F3F461888,0x800,0x12C000)/\EFI\almalinux\shimx64.efi
Use the <↑> and <↓> keys to choose a boot option, the <Enter> key to select a boot option, and the <Esc> key to exit the Boot Manager Menu.
↑↓=Move Highlight
<Enter>=Select Entry
Esc=Exit
Ver Ayuda
UO285176
Windows (UTF-8
CTRL DERECHA

Insertamos la iso de AlmaLinux en VBox:

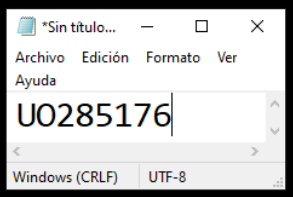






Le damos a continue y obtenemos una Shell, en la que hacemos un **$ ls /mnt/sysroot** para ver el contenido que se está reparando:

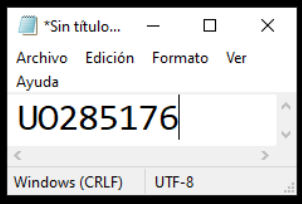
```
Starting installer, one moment...
anaconda 34.25.1.14-1.el9.alma for AlmaLinux 9.1 started.
 * installation log files are stored in /tmp during the installation
 * shell is available on TTY2
 * when reporting a bug add logs from /tmp as separate text/plain attachments
================================================================================
================================================================================
Rescue

The rescue environment will now attempt to find your Linux installation and
mount it under the directory : /mnt/sysroot.  You can then make any changes
required to your system.  Choose '1' to proceed with this step.
You can choose to mount your file systems read-only instead of read-write by
choosing '2'.
If for some reason this process does not work choose '3' to skip directly to a
shell.



1) Continue
2) Read-only mount
3) Skip to shell
4) Quit (Reboot)

Please make a selection from the above: 1
================================================================================
================================================================================
Rescue Shell

Your system has been mounted under /mnt/sysroot.

If you would like to make the root of your system the root of the active system,
run the command:

        chroot /mnt/sysroot

When finished, please exit from the shell and your system will reboot.

Please press ENTER to get a shell:
bash-5.1# pwd
/
bash-5.1# loadkeys es
bash-5.1# ls /mnt/sys
sysimage/ sysroot/
bash-5.1# ls /mnt/sysroot/
afs  bin  boot  dev  etc  home  lib  lib64  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr  var
bash-5.1# _
```



Nota*: Se ha cargado el teclado a español con **$ loadkeys** es

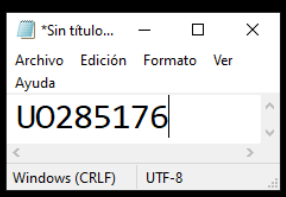
Hacemos **$ chroot /mnt/sysroot** para que sea el directorio raíz:

```
bash-5.1#
bash-5.1#
bash-5.1#
bash-5.1# chroot /mnt/sysroot
bash-5.1# pwd
/
bash-5.1# ls
afs  bin  boot  dev  etc  home  lib  lib64  media  mnt  opt  proc  root  run  sbin  srv  sys  tmp  usr  var
bash-5.1# _
```

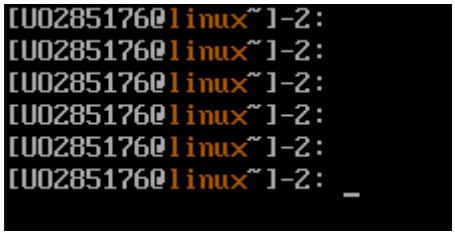


Retocamos el fichero de configuración de nuevo:

```
title AlmaLinux (5.14.0-162.12.1.el9_1.x86_64) 9.1 (Lime Lynx)
version 5.14.0-162.12.1.el9_1.x86_64
linux /vmlinuz-5.14.0-162.12.1.el9_1.x86_64
initrd /initramfs-5.14.0-162.12.1.el9_1.x86_64.img
options root=/dev/mapper/almalinux-root ro crashkernel=1G-4G:192M,4G-64G:256M,64G-:512M resume=/dev/mapper/almalinux-sw
.lv=almalinux/root rd.lvm.lv=almalinux/swap
grub_users $grub_users
grub_arg --unrestricted
grub_class almalinux
~
~
~
~
~
~
~
~
~
~
~
~
~
```

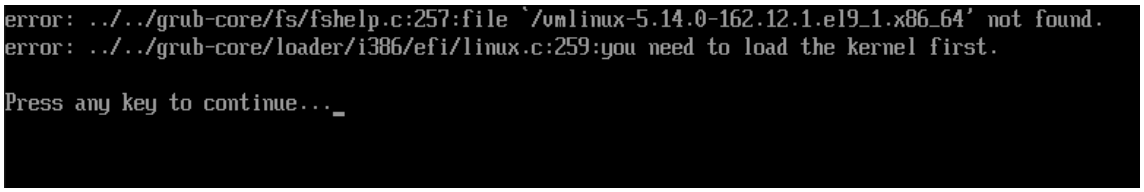


Reiniciamos y ya vuelve a arrancar de nuevo:

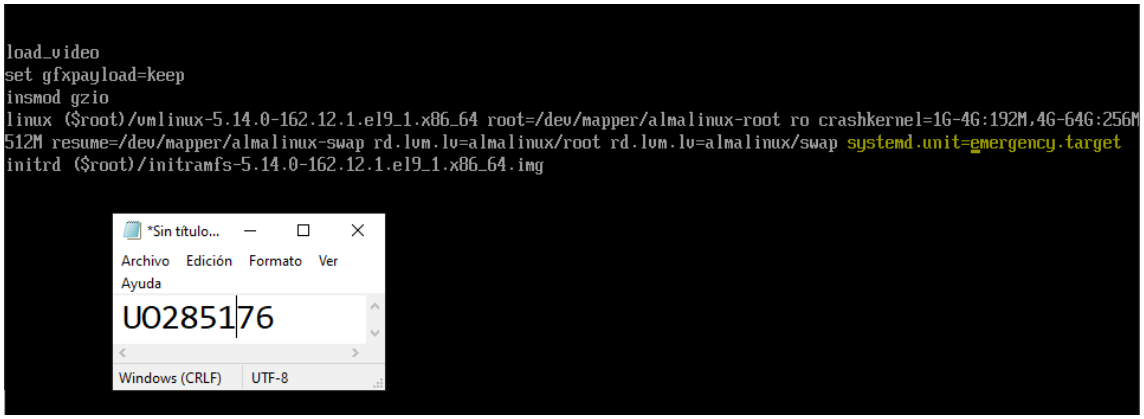


Volvemos a retocar el fichero de configuración de la misma manera que el punto 2

Vuelve a fallar:

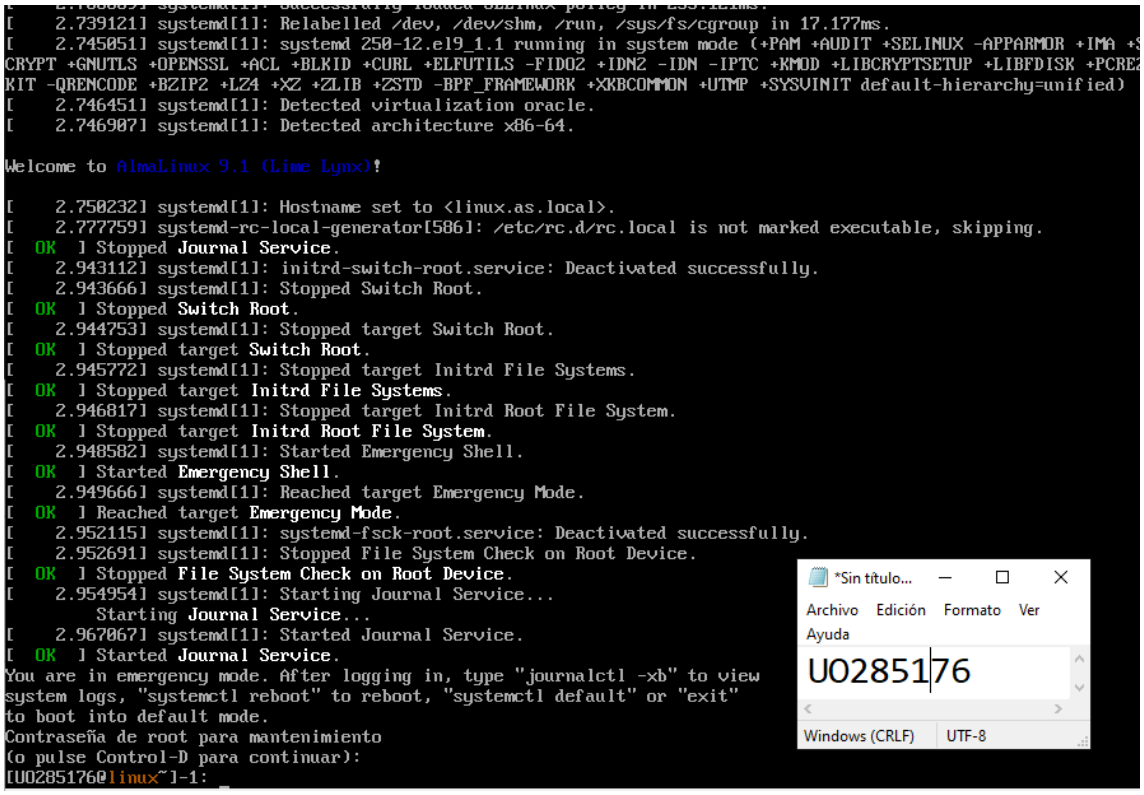


Al iniciar el sistema pulsamos la tecla "e" y editamos el texto: systemd.unit=emergency.target



Hacemos Ctrl+X para salvar y start (no me lo permitía inicialmente porque ponía vmlinux y debería ser vmlinuz)

Obtenemos una Shell como root:



Comprobamos con Alt+F2 que no hay múltiples sesiones.

Comprobamos la red con **$ nmcli**:

```
[UO285176@linux~]-2: nmcli
Error: no se pudo crear el objeto NMClient: No se pudo conectar: No existe el fichero o el directorio.
[UO285176@linux~]-3:
```

Comprobamos que no podemos instalar nada:

```
[UO285176@linux~]-3: dnf install discord
Error de configuración: [Errno 30] Sistema de ficheros de sólo lectura: '/var/log/dnf.log': '/var/log/dnf.log'
[UO285176@linux~]-4: dnf install vim
Error de configuración: [Errno 30] Sistema de ficheros de sólo lectura: '/var/log/dnf.log': '/var/log/dnf.log'
[UO285176@linux~]-5:
```

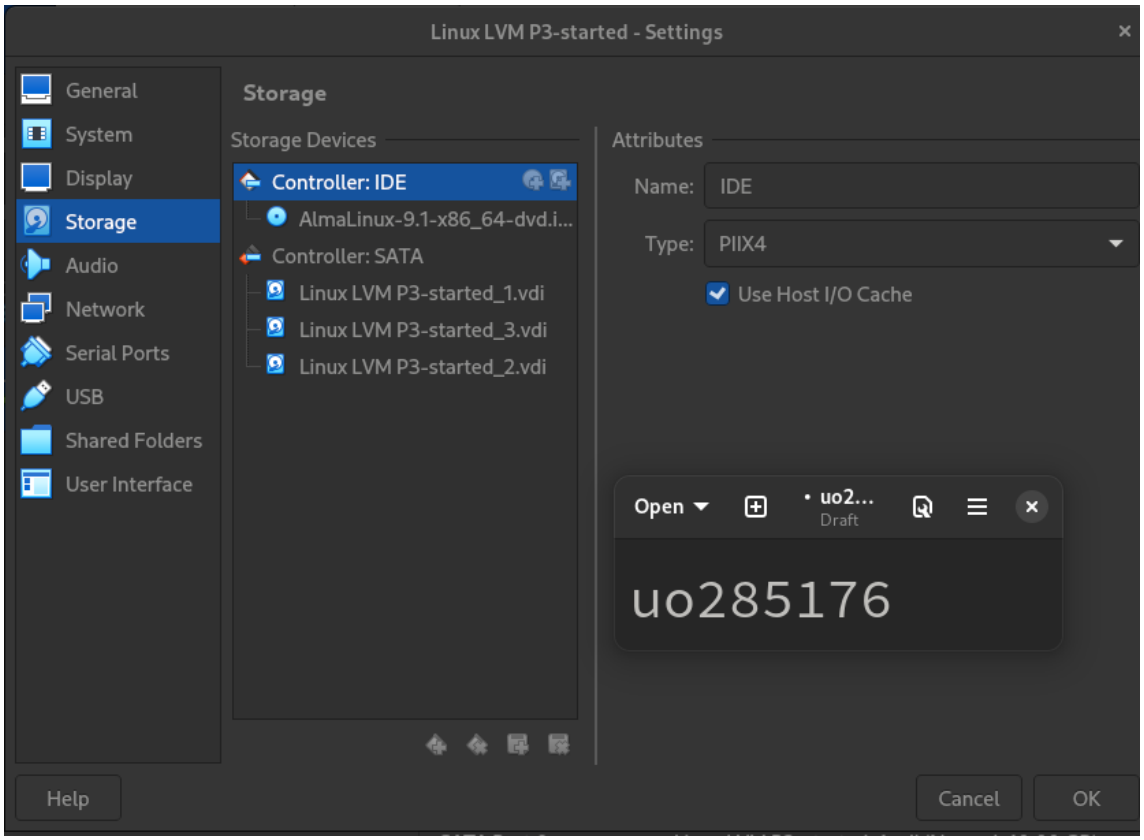
Mantiene vmlinux pues, aunque hagas cambios en el modo de emergencia, los cambios no son persistentes.

Si lo volvemos a modificar, ya podremos arrancar con normalidad.

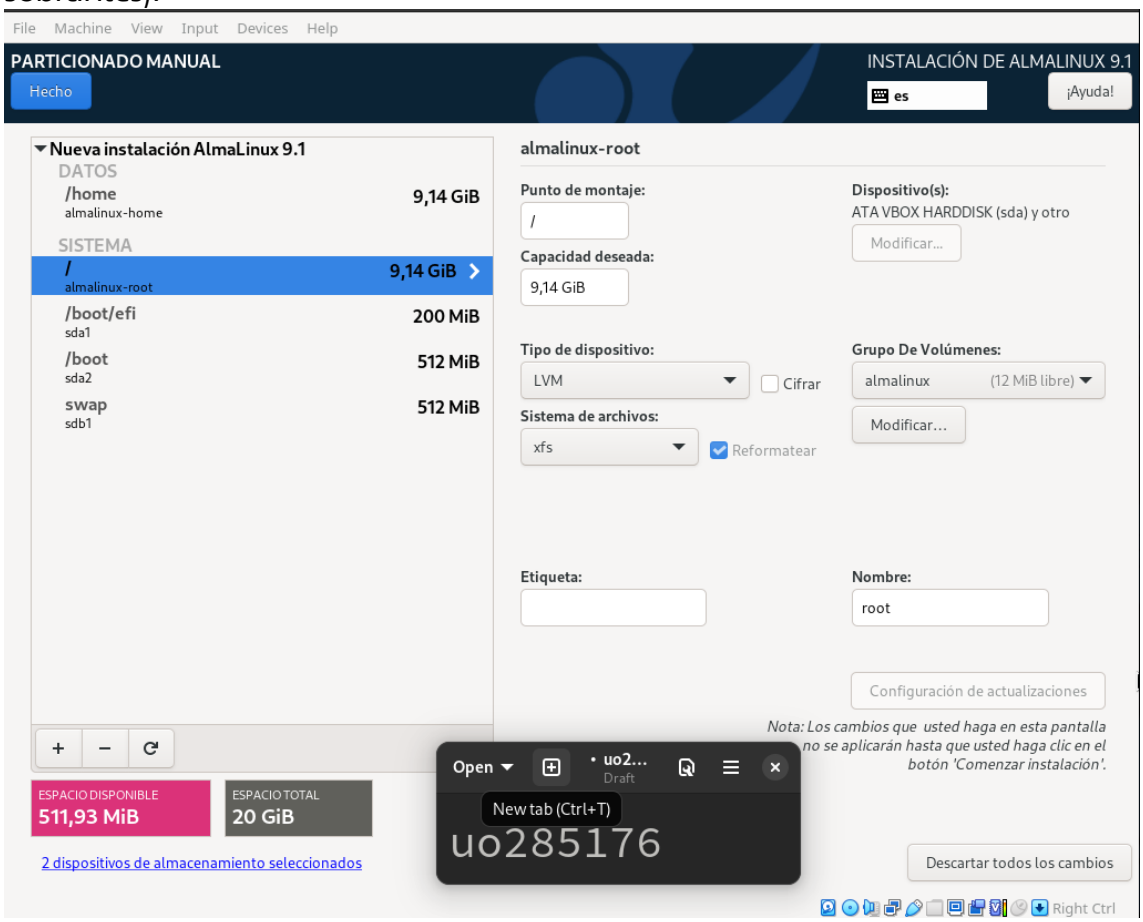
```
Bienvenido al SO  de UO285176!
Hoy es Wed Feb 15  2023 10:20:45 @ linux.as.local
linux login: root
Password:
Last login: Wed Feb 15 10:15:33 on tty1
################################################################################
Preparado para hackear... UO285176 ;)
################################################################################
[UO285176@linux~]-1:
```

B. Instalación de Linux con particionamiento dinámico

Creamos un Linux con 3 discos de 10 Gb cada uno:



Se ha hecho la siguiente configuración especificada (se dejaron aproximadamente 512 Mb sobrantes):



Comprobamos el resultado con **$ lsblk -f**:

```
[root@localhost ~]#
[root@localhost ~]#
[root@localhost ~]#
[root@localhost ~]#
[root@localhost ~]# lsblk -f
NAME                FSTYPE      FSVER    LABEL UUID                                   FSAVAIL FSUSE% MOUNTPOINTS
sda
├─sda1              vfat        FAT16          B098-5BED                               192,8M     3% /boot/efi
├─sda2              xfs                        63691b89-bc57-4634-a5fc-7a8064dadb64    306,1M    40% /boot
└─sda3              LVM2_member LVM2 001       nn0Zm0-uKnN-IdN9-mMbf-V?QB-hKSK-DjvWxf
  └─almalinux-home xfs                        a95f6046-6835-4601-9e38-a16d5fe4afcf        9G     1% /home
sdb
├─sdb1              swap        1              275fc734-50ea-4728-96aa-23e8a73019f9                [SWAP]
└─sdb2              LVM2_member LVM2 001       i8VVTe-607u-UMVW-qyKq-1LyO-KbPT-ImNaXr
  ├─almalinux-root xfs                        3004a291-8fec-417f-ae90-36f9d6dca8a7      8,1G    12% /
  └─almalinux-home xfs                        a95f6046-6835-4601-9e38-a16d5fe4afcf        9G     1% /home
sdc
sr0
[root@localhost ~]# Soy UO285176
```

Creamos la partición que ocupa todo el espacio en el tercer disco de tipo LVM:
Creamos el volumen físico en /dev/sdc1 con **$ pvcreate /dev/sdc1**:

```
[root@localhost ~]# gdisk /dev/sdc
GPT fdisk (gdisk) version 1.0.7

Partition table scan:
  MBR: not present
  BSD: not present
  APM: not present
  GPT: not present

Creating new GPT entries in memory.

Command (? for help): n
Partition number (1-128, default 1):
First sector (34-20971486, default = 2048) or {+-}size{KMGTP}:
Last sector (2048-20971486, default = 20971486) or {+-}size{KMGTP}: +10G
Last sector (2048-20971486, default = 20971486) or {+-}size{KMGTP}:
Current type is 8300 (Linux filesystem)
Hex code or GUID (L to show codes, Enter = 8300): 8e00
Changed type of partition to 'Linux LVM'

Command (? for help): p
Disk /dev/sdc: 20971520 sectors, 10.0 GiB
Model: VBOX HARDDISK
Sector size (logical/physical): 512/512 bytes
Disk identifier (GUID): B89B740B-0172-421D-B143-3CDC75F1126E
Partition table holds up to 128 entries
Main partition table begins at sector 2 and ends at sector 33
First usable sector is 34, last usable sector is 20971486
Partitions will be aligned on 2048-sector boundaries
Total free space is 2014 sectors (1007.0 KiB)

Number  Start (sector)    End (sector)  Size       Code  Name
   1            2048        20971486   10.0 GiB    8E00  Linux LVM

Command (? for help):
```

Open • uo2... Draft

uo285176

```
[root@localhost ~]#
[root@localhost ~]#
[root@localhost ~]# pvcreate /dev/sdc
  Cannot use /dev/sdc: device is partitioned
[root@localhost ~]# pvcreate /dev/sdc
  Cannot use /dev/sdc: device is partitioned
[root@localhost ~]# lsblk /dev/sdc
NAME   MAJ:MIN RM SIZE RO TYPE MOUNTPOINTS
sdc      8:32   0  10G  0 disk
└─sdc1   8:33   0  10G  0 part
[root@localhost ~]# lsblk /dev/sdc1
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINTS
sdc1   8:33   0  10G  0 part
[root@localhost ~]# pvcreate /dev/sdc1
  Physical volume "/dev/sdc1" successfully created.
[root@localhost ~]# soy UO285176_
```

Nota: cambié el foreground a rojo porque me aburrí del verde.

Añadimos el volumen físico al grupo almalinux con la orden **$ vgextend almalinux /dev/sdc1**

```
[root@localhost ~]# umount /home
[  211.971796] XFS (dm-1): Unmounting Filesystem
[root@localhost ~]# lsblk -f
NAME      FSTYPE      FSVER            LABEL                   UUID                                   FSAVAIL FSUSE% MOUNTPOINTS
sda
├─sda1    swap        1                                        97998f02-23d0-41f7-80d9-b517cbabc4b6                  [SWAP]
└─sda2    LVM2_member LVM2 001                                 F2Qf33-ML0x-Ac90-pFo6-Guqf-9nTU-qV0RYV
  ├─almalinux-root
  │       xfs                                                  247c7b3f-b836-49ab-98b4-75433f612d4e      8,1G    12% /
  └─almalinux-home
          xfs                                                  95adb9f2-ad65-400d-98e4-641c0932a873
sdb
├─sdb1    vfat        FAT16                                    D535-EE43                                 192,8M     3% /boot/efi
├─sdb2    xfs                                                  31828563-18ef-4abd-a048-1f04a5740f1c    306,1M    40% /boot
└─sdb3    LVM2_member LVM2 001                                 KEMDru-8zLr-clbB-H52a-wr5E-wCTG-pSTEaX
  └─almalinux-root
          xfs                                                  247c7b3f-b836-49ab-98b4-75433f612d4e      8,1G    12% /
sdc
└─sdc1    LVM2_member LVM2 001                                 f3DoE7-roTJ-mduw-Ji7c-A1My-q7fR-uKx7B2
sr0       iso9660     Joliet Extension AlmaLinux-9-1-x86_64-dvd 2022-11-16-15-14-13-00
[root@localhost ~]# soy el UO285176
```

Para extender el volumen lógico que contiene a /home haremos:

- Desmontamos /home con **$ umount /home**:

```
[root@localhost ~]# umount /home
[  211.971796] XFS (dm-1): Unmounting Filesystem
[root@localhost ~]# lsblk -f
NAME      FSTYPE      FSVER            LABEL                  UUID                                   FSAVAIL FSUSE% MOUNTPOINTS
sda
├─sda1    swap        1                                       97998f02-23d0-41f7-80d9-b517cbabc4b6                  [SWAP]
└─sda2    LVM2_member LVM2 001                                F2Qf33-ML0x-Ac90-pFo6-Guqf-9nTU-qV0RYV
  ├─almalinux-root
  │       xfs                                                 247c7b3f-b836-49ab-98b4-75433f612d4e      8,1G    12% /
  └─almalinux-home
          xfs                                                 95adb9f2-ad65-480d-98e4-641c0932a873
sdb
├─sdb1    vfat        FAT16                                   D535-EE43                              192,8M     3% /boot/efi
├─sdb2    xfs                                                 31828563-18ef-4abd-a048-1f04a5740f1c   306,1M    40% /boot
└─sdb3    LVM2_member LVM2 001                                KENDru-8zLr-cIbB-H52a-wr5E-wCTG-pSTEaX
  └─almalinux-root
          xfs                                                 247c7b3f-b836-49ab-98b4-75433f612d4e      8,1G    12% /
sdc
└─sdc1    LVM2_member LVM2 001                                f3DoE7-roTJ-mduw-Ji7c-A1My-q7fR-uKx7B2
sr0       iso9660     Joliet Extension AlmaLinux-9-1-x86_64-dvd 2022-11-16-15-14-13-00
[root@localhost ~]#
[root@localhost ~]#
```

- Extendemos el volumen lógico para que use otros 4Gb del tercer disco con **$ lvextend -L+4G /dev/almalinux/home /dev/sdc1**:

```
[root@localhost ~]# lvextend -L+4G  /dev/sdc1
  "/dev/sdc1": Invalid path for Logical Volume.
  Run `lvextend --help' for more information.
[root@localhost ~]# lvextend -L+4G /dev/almalinux/home  /dev/sdc1
  Size of logical volume almalinux/home changed from <9,15 GiB (2342 extents) to <13,15 GiB (3366 extents).
[  415.897381] dm-1: detected capacity change from 19185664 to 27574272
  Logical volume almalinux/home successfully resized.
[root@localhost ~]# SOY EL UO285176_
```

- Volvemos a montar /home con **$ mount /home**:

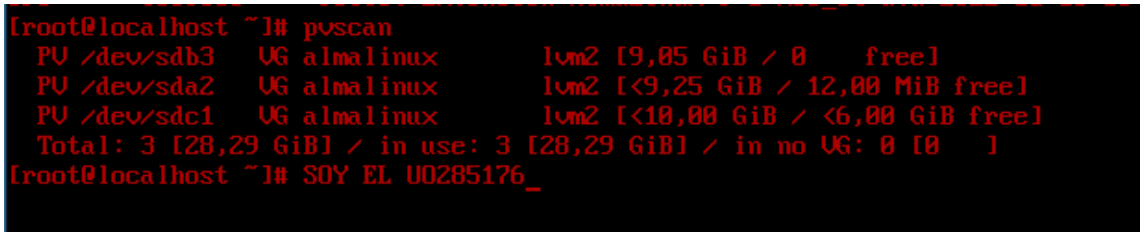
```
[root@localhost ~]# mount /home
[  639.334245] XFS (dm-1): Mounting V5 Filesystem
[  639.351240] XFS (dm-1): Ending clean mount
[root@localhost ~]# lsblk -f
NAME      FSTYPE      FSVER            LABEL                  UUID                                   FSAVAIL FSUSE% MOUNTPOINTS
sda
├─sda1    swap        1                                       97998f02-23d0-41f7-80d9-b517cbabc4b6                  [SWAP]
└─sda2    LVM2_member LVM2 001                                F2Qf33-ML0x-Ac90-pFo6-Guqf-9nTU-qV0RYV
  ├─almalinux-root
  │       xfs                                                 247c7b3f-b836-49ab-98b4-75433f612d4e      8,1G    12% /
  └─almalinux-home
          xfs                                                 95adb9f2-ad65-480d-98e4-641c0932a873        9G     1% /home
sdb
├─sdb1    vfat        FAT16                                   D535-EE43                              192,8M     3% /boot/efi
├─sdb2    xfs                                                 31828563-18ef-4abd-a048-1f04a5740f1c   306,1M    40% /boot
└─sdb3    LVM2_member LVM2 001                                KENDru-8zLr-cIbB-H52a-wr5E-wCTG-pSTEaX
  └─almalinux-root
          xfs                                                 247c7b3f-b836-49ab-98b4-75433f612d4e      8,1G    12% /
sdc
└─sdc1    LVM2_member LVM2 001                                f3DoE7-roTJ-mduw-Ji7c-A1My-q7fR-uKx7B2
  └─almalinux-home
          xfs                                                 95adb9f2-ad65-480d-98e4-641c0932a873        9G     1% /home
sr0       iso9660     Joliet Extension AlmaLinux-9-1-x86_64-dvd 2022-11-16-15-14-13-00
[root@localhost ~]# SOY EL UO285176_
```

- Aplicamos el ajuste de tamaño al filesystem con $ xfs_growfs /dev/almalinux/home:

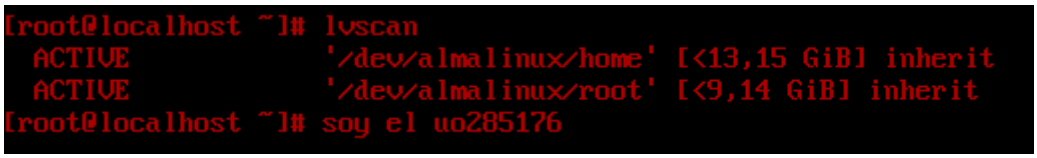
```
[root@localhost ~]# xfs_growfs /dev/almalinux/home
meta-data=/dev/mapper/almalinux-home isize=512    agcount=4, agsize=599552 blks
         =                       sectsz=512   attr=2, projid32bit=1
         =                       crc=1        finobt=1, sparse=1, rmapbt=0
         =                       reflink=1    bigtime=1 inobtcount=1
data     =                       bsize=4096   blocks=2398208, imaxpct=25
         =                       sunit=0      swidth=0 blks
naming   =version 2              bsize=4096   ascii-ci=0, ftype=1
log      =internal log           bsize=4096   blocks=2560, version=2
         =                       sectsz=512   sunit=0 blks, lazy-count=1
realtime =none                   extsz=4096   blocks=0, rtextents=0
data blocks changed from 2398208 to 3446784
[root@localhost ~]# lsblk -f
NAME      FSTYPE      FSVER            LABEL                  UUID                                   FSAVAIL FSUSE% MOUNTPOINTS
sda
├─sda1    swap        1                                       97998f02-23d0-41f7-80d9-b517cbabc4b6                  [SWAP]
└─sda2    LVM2_member LVM2 001                                F2Qf33-ML0x-Ac90-pFo6-Guqf-9nTU-qV0RYV
  ├─almalinux-root
  │       xfs                                                 247c7b3f-b836-49ab-98b4-75433f612d4e      8,1G    12% /
  └─almalinux-home
          xfs                                                 95adb9f2-ad65-480d-98e4-641c0932a873       13G     1% /home
sdb
├─sdb1    vfat        FAT16                                   D535-EE43                              192,8M     3% /boot/efi
├─sdb2    xfs                                                 31828563-18ef-4abd-a048-1f04a5740f1c   306,1M    40% /boot
└─sdb3    LVM2_member LVM2 001                                KENDru-8zLr-cIbB-H52a-wr5E-wCTG-pSTEaX
  └─almalinux-root
          xfs                                                 247c7b3f-b836-49ab-98b4-75433f612d4e      8,1G    12% /
sdc
└─sdc1    LVM2_member LVM2 001                                f3DoE7-roTJ-mduw-Ji7c-A1My-q7fR-uKx7B2
  └─almalinux-home
          xfs                                                 95adb9f2-ad65-480d-98e4-641c0932a873       13G     1% /home
sr0       iso9660     Joliet Extension AlmaLinux-9-1-x86_64-dvd 2022-11-16-15-14-13-00
[root@localhost ~]# SOY EL UO285176
```

Como se puede apreciar, se aumentó /home a 13Gb

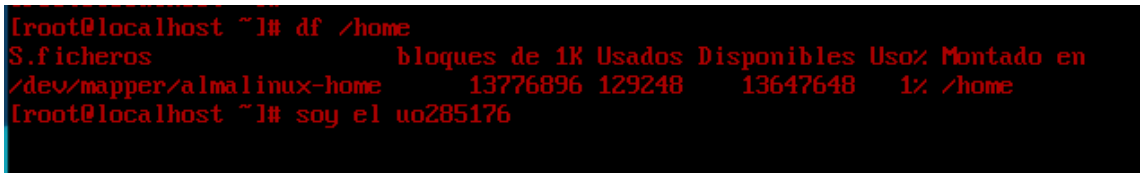
- Ejecutamos la orden **$ pvscan**:

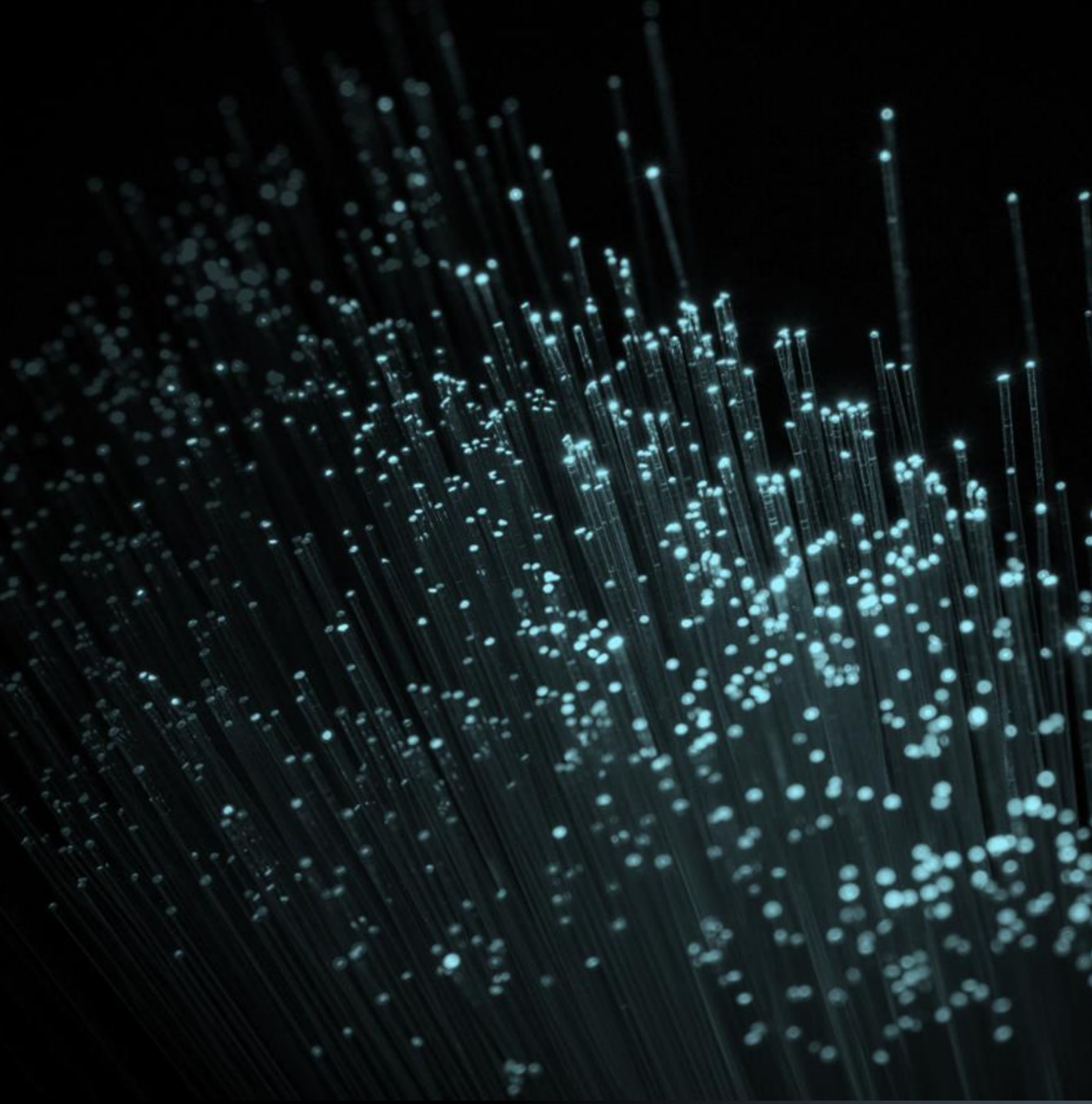


- Ejecutamos la orden **$ lvscan**:



- Ejecutamos la orden **$ df /home**:





Escuela de Ingeniería Informática
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