Proyecto LVM.
Pantallas de la ejecución de los comandos.

Comando de "pvdisplay" antes de realizar la extensión.

```
 root@localhost:~
[root@localhost LXS2_lsandoval01]# cd
[root@localhost ~]# cd LXS2_lsandoval01/history/
[root@localhost history]# cd
[root@localhost ~]# cd LXS2_lsandoval01/Proyecto/
[root@localhost Proyecto]# history >> Proyecto
[root@localhost Proyecto]# ls
LVM   Proyecto
[root@localhost Proyecto]# rm -rf Proyecto
[root@localhost Proyecto]# LS
-bash: LS: command not found
[root@localhost Proyecto]# ls
LVM
[root@localhost Proyecto]# cd LVM/
[root@localhost LVM]# cd
[root@localhost ~]# pvdisplay
  --- Physical volume ---
  PV Name               /dev/sda2
  VG Name               centos
  PV Size               9.33 GiB / not usable 4.00 MiB
  Allocatable           yes
  PE Size               4.00 MiB
  Total PE              2387
  Free PE               3
  Allocated PE          2384
  PV UUID               amZNz7-S1Ue-LhZq-kQPT-5HZP-2HIa-MkPviF

[root@localhost ~]# df -h
Filesystem              Size  Used Avail Use% Mounted on
/dev/mapper/centos-root 4.7G  1.3G  3.5G  27% /
devtmpfs                911M     0  911M   0% /dev
tmpfs                   921M     0  921M   0% /dev/shm
tmpfs                   921M  8.4M  912M   1% /run
tmpfs                   921M     0  921M   0% /sys/fs/cgroup
/dev/sda1               9.4G  154M  9.2G   2% /boot
tmpfs                   185M     0  185M   0% /run/user/0
[root@localhost ~]# lsblk -fm
NAME            FSTYPE      LABEL UUID                                   MOUNTPOINT NAME            SIZE OWNER GROUP MODE
sda                                                                                sda              20G root  disk  brw-rw----
 -sda1          xfs               71a8132a-be43-40b5-bcc7-993999a1d368   /boot       -sda1          9.3G root  disk  brw-rw----
 -sda2          LVM2_member       amZNz7-S1Ue-LhZq-kQPT-5HZP-2HIa-MkPviF             -sda2          9.3G root  disk  brw-rw----
   -centos-root xfs               db4d0fbd-6209-412f-b2f2-3e903d4b6d04   /            -centos-root 4.7G root  disk  brw-rw----
   -centos-swap swap              475b9bd0-57da-4a6a-9ad7-251f53d20688   [SWAP]       -centos-swap 4.7G root  disk  brw-rw----
sr0                                                                                sr0            1024M root  cdrom brw-rw----
[root@localhost ~]#
```
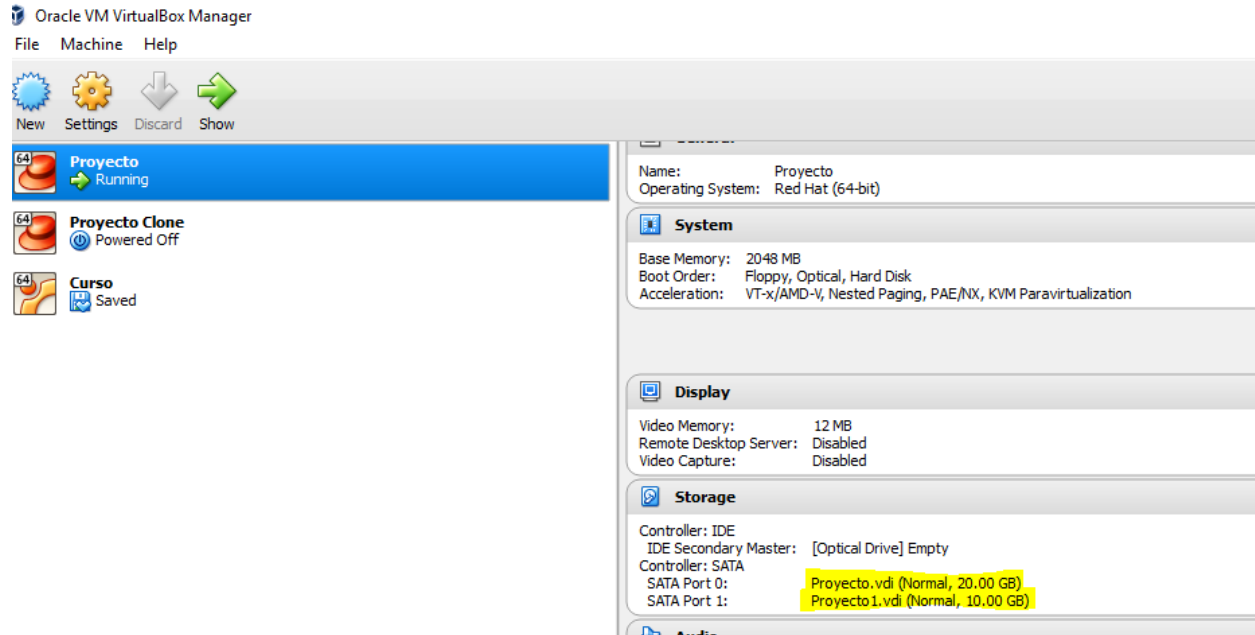
Comando de vgdisplay antes de realizar la extensión.

```
 root@localhost:~
login as: root
root@192.168.0.8's password:
Last login: Mon Oct  3 01:17:26 2016
[root@localhost ~]# vgdisplay
  --- Volume group ---
  VG Name               centos
  System ID
  Format                lvm2
  Metadata Areas        1
  Metadata Sequence No  3
  VG Access             read/write
  VG Status             resizable
  MAX LV                0
  Cur LV                2
  Open LV               2
  Max PV                0
  Cur PV                1
  Act PV                1
  VG Size               9.32 GiB
  PE Size               4.00 MiB
  Total PE              2387
  Alloc PE / Size       2384 / 9.31 GiB
  Free  PE / Size       3 / 12.00 MiB
  VG UUID               hvfTqg-EUpT-i41q-3Gkk-Oz69-2cZf-C1L0OP

[root@localhost ~]#
```

Comando de lvdisplay antes de realizar la extension con particiones de 4.66 GB.

```
root@localhost:~

  Act PV                1
  VG Size               9.32 GiB
  PE Size               4.00 MiB
  Total PE              2387
  Alloc PE / Size       2384 / 9.31 GiB
  Free  PE / Size       3 / 12.00 MiB
  VG UUID               hvfTqg-EUpT-i41q-3Gkk-Oz69-2cZf-C1L0OP

[root@localhost ~]# lvdisplay
  --- Logical volume ---
  LV Path                /dev/centos/swap
  LV Name                swap
  VG Name                centos
  LV UUID                F88LOe-ADO2-0ZOW-cXQB-dC49-UVNi-3QpT47
  LV Write Access        read/write
  LV Creation host, time localhost, 2016-10-02 23:47:57 -0400
  LV Status              available
  # open                 2
  LV Size                4.66 GiB
  Current LE             1192
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     8192
  Block device           253:1

  --- Logical volume ---
  LV Path                /dev/centos/root
  LV Name                root
  VG Name                centos
  LV UUID                ZWNInR-Dimt-guoj-XHCx-XxoT-7IMu-TxanFO
  LV Write Access        read/write
  LV Creation host, time localhost, 2016-10-02 23:47:58 -0400
  LV Status              available
  # open                 1
  LV Size                4.66 GiB
  Current LE             1192
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     8192
  Block device           253:0

[root@localhost ~]#
```

Creacion del disco duro desde el Virtual Box.

Comando lsblk donde muestra el disco nuevo "sdb 10 GB".

Comando "pvcreate" donde se crea el nuevo volumen fisico sdb.

```
[root@localhost LXS2_lsandoval01]# lsblk
NAME              MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda                  8:0    0   20G  0 disk
 ├─sda1              8:1    0  9.3G  0 part /boot
 └─sda2              8:2    0  9.3G  0 part
   ├─centos-root 253:0    0  4.7G  0 lvm  /
   └─centos-swap 253:1    0  4.7G  0 lvm  [SWAP]
sdb                 8:16    0   10G  0 disk
sr0                 11:0    1 1024M  0 rom
[root@localhost LXS2_lsandoval01]# pvcreate /dev/sdb
  Physical volume "/dev/sdb" successfully created
[root@localhost LXS2_lsandoval01]#
```

Salida del comando pvdisplay después de crear el volumen.

```
[root@localhost LXS2_lsandoval01]# lsblk
NAME              MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda                  8:0    0   20G  0 disk
 ├─sda1              8:1    0  9.3G  0 part /boot
 └─sda2              8:2    0  9.3G  0 part
   ├─centos-root 253:0    0  4.7G  0 lvm  /
   └─centos-swap 253:1    0  4.7G  0 lvm  [SWAP]
sdb                 8:16    0   10G  0 disk
sr0                 11:0    1 1024M  0 rom
[root@localhost LXS2_lsandoval01]# pvcreate /dev/sdb
  Physical volume "/dev/sdb" successfully created
[root@localhost LXS2_lsandoval01]# pvdisplay
  --- Physical volume ---
  PV Name               /dev/sda2
  VG Name               centos
  PV Size               9.33 GiB / not usable 4.00 MiB
  Allocatable           yes
  PE Size               4.00 MiB
  Total PE              2387
  Free PE               3
  Allocated PE          2384
  PV UUID               amZNz7-S1Ue-LhZq-kQPT-5HZP-2HIa-MkPviF

  "/dev/sdb" is a new physical volume of "10.00 GiB"
  --- NEW Physical volume ---
  PV Name               /dev/sdb
  VG Name
  PV Size               10.00 GiB
  Allocatable           NO
  PE Size               0
  Total PE              0
  Free PE               0
  Allocated PE          0
  PV UUID               9j6BYd-4PP5-1SM0-Oi6r-d55M-hZuz-jHcuKv

[root@localhost LXS2_lsandoval01]#
```

Salida del comando donde se crea el aumento del volumen Group CentOS.


```
root@localhost:~
   vgconvert        Change volume group metadata format
   vgcreate         Create a volume group
   vgdisplay        Display volume group information
   vgexport         Unregister volume group(s) from the system
   vgextend         Add physical volumes to a volume group
   vgimport         Register exported volume group with system
   vgmerge          Merge volume groups
   vgmknodes        Create the special files for volume group devices in /dev
   vgreduce         Remove physical volume(s) from a volume group
   vgremove         Remove volume group(s)
   vgrename         Rename a volume group
   vgs              Display information about volume groups
   vgscan           Search for all volume groups
   vgsplit          Move physical volumes into a new or existing volume group
   version          Display software and driver version information
lvm> vgdisplay
   --- Volume group ---
   VG Name               centos
   System ID
   Format                lvm2
   Metadata Areas        1
   Metadata Sequence No  3
   VG Access             read/write
   VG Status             resizable
   MAX LV                0
   Cur LV                2
   Open LV               2
   Max PV                0
   Cur PV                1
   Act PV                1
   VG Size               9.32 GiB
   PE Size               4.00 MiB
   Total PE              2387
   Alloc PE / Size       2384 / 9.31 GiB
   Free  PE / Size       3 / 12.00 MiB
   VG UUID               hvfTqg-EUpT-i41q-3Gkk-Oz69-2cZf-C1L0OP

lvm> vgextend
  Please enter volume group name and physical volume(s)
lvm> vgextend centos
  Please enter a physical volume path.
lvm> vgextend centos /dev/sdb
  Volume group "centos" successfully extended
lvm>
```

Salida del comando ya con el espacio disponible en el Volumen Group CentOS.

```
                            hvffqg EUpT i4iq 5Gkk Oz69 2cZf C1L0OP

lvm> vgextend
  Please enter volume group name and physical volume(s)
lvm> vgextend centos
  Please enter a physical volume path.
lvm> vgextend centos /dev/sdb
  Volume group "centos" successfully extended
lvm> vgdisplay
  --- Volume group ---
  VG Name               centos
  System ID
  Format                lvm2
  Metadata Areas        2
  Metadata Sequence No  4
  VG Access             read/write
  VG Status             resizable
  MAX LV                0
  Cur LV                2
  Open LV               2
  Max PV                0
  Cur PV                2
  Act PV                2
  VG Size               19.32 GiB
  PE Size               4.00 MiB
  Total PE              4946
  Alloc PE / Size       2384 / 9.31 GiB
  Free  PE / Size       2562 / 10.01 GiB
  VG UUID               hvfTqg-EUpT-i41q-3Gkk-Oz69-2cZf-C1L0OP

lvm>
```

Comando lvextend para la partición swap de 2 GB.

```
lvm>  Free  PE / Size       2562 / 10.01 GiB
  No such command 'Free'.  Try 'help'.
lvm> lvextend -L+2GB /dev/centos/swap
  Size of logical volume centos/swap changed from 4.66 GiB (1192 extents) to 6.6
6 GiB (1704 extents).
  Logical volume swap successfully resized.
lvm>
```

Comando lvextend para la partición root de 2 GB.

Salida del comando lvdisplay después de la extensión de las particiones.

```
[root@localhost ~]# lvdisplay
  --- Logical volume ---
  LV Path                /dev/centos/swap
  LV Name                swap
  VG Name                centos
  LV UUID                F88LOe-ADO2-0ZOW-cXQB-dC49-UVNi-3QpT47
  LV Write Access        read/write
  LV Creation host, time localhost, 2016-10-02 23:47:57 -0400
  LV Status              available
  # open                 2
  LV Size                6.66 GiB
  Current LE             1704
  Segments               3
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     8192
  Block device           253:1

  --- Logical volume ---
  LV Path                /dev/centos/root
  LV Name                root
  VG Name                centos
  LV UUID                ZWNInR-Dimt-guoj-XHCx-XxoT-7IMu-TxanFO
  LV Write Access        read/write
  LV Creation host, time localhost, 2016-10-02 23:47:58 -0400
  LV Status              available
  # open                 1
  LV Size                6.66 GiB
  Current LE             1704
  Segments               2
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     8192
  Block device           253:0

[root@localhost ~]#
```

Listado de Comandos utilizados

cd	Moverse entre directorios	vgremote	Remueve volumenes
ls	Listar directorios	vgextend	Extiende volumenes
Pvdisplay	Mostrar discos	df -h	Muestra información de discos.
Lvdisplay	Mostrar volúmenes	fdisk	
vgdisplay	Mostrar grupos de volumenes		
lvextend	Extender particiones		
pvcreate	Crear discos físicos		
pvremote	Remover discos físicos		
Lvm	Ingreso a consola de lvm		
lsblk	Muestra los discos fisicos		