

LVM: Create a new Logical Volume / Filesystem

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LVM: Create a new Logical Volume / Filesystem

```
# Tested on RHEL 5, 6 & 7

# Concatenated volume
# -----
-----

MNTPT=/testmntpt
OWNER=testusr.testgrp
VG=testvg
LV=testlv
SIZE=512                # Final size in MBytes
FSTYPE=ext3             # ext4 can be created from RHEL 5 on

# LV creation. Size given in Mbytes. To specify size in Logical
# Extents use '-l'

lvcreate -L ${SIZE}M -n $LV $VG
    Logical volume "testlv" created.

# Show new LV (note volume group is formed by three physical volumes
# but only one of them
# has been used for the logical volume)

pvs | egrep "PFree|$VG"
    PV          VG          Fmt  Attr PSize      PFree
```

```
/dev/sde1 testvg lvm2 a-- 1020.00m 508.00m
/dev/sde2 testvg lvm2 a-- 1020.00m 1020.00m
/dev/sde3 testvg lvm2 a-- 1020.00m 1020.00m
```

```
lvdisplay -m /dev/$VG/$LV
```

```
--- Logical volume ---
```

```
LV Path          /dev/testvg/testlv
LV Name          testlv
VG Name          testvg
LV UUID          nBmMJZ-VlHJ-8JYS-WEQ7-bHxi-kock-31aGZS
LV Write Access  read/write
LV Creation host, time myserver.localdomain, 2016-02-23 16:25:41
```

```
+0100
```

```
LV Status        available
# open           0
LV Size          512.00 MiB
Current LE       128
Segments         1
Allocation       inherit
Read ahead sectors  auto
- currently set to 8192
Block device     253:8
```

```
--- Segments ---
```

```
Logical extents 0 to 127:
  Type           linear
  Physical volume /dev/sde1
  Physical extents 0 to 127
```

```
# Filesystem creation
```

```
mkfs -V -t $FSTYPE /dev/$VG/$LV
```

```
mkdir -p $MNTPT
```

```
mount /dev/$VG/$LV $MNTPT
```

```
chown $OWNER $MNTPT
```

```
# Check

df -h $MNTPT
ls -ld $MNTPT

# Add output of following command to /etc/fstab
echo "/dev/$VG/$LV          $MNTPT          $FSTYPE
defaults          1 2"

# Stripped over several physical volumes
# -----
-----

MNTPT=/testmntpt
OWNER=testusr.testgrp
VG=testvg
LV=testlv
SIZE=512          # Final size in MBytes
FSTYPE=ext3      # ext4 can be created from RHEL 5 on
STRIPES=2        # Number of stripes/PV
DISKS="/dev/sde1 /dev/sde3"

# LV creation. Size given in Mbytes. To specify size in Logical
Extents use '-l'

lvcreate -L ${SIZE}M -n $LV -i $STRIPES $VG $DISKS
    Logical volume "testlv" created.

# Show new LV (note volume group is formed by three physical volumes
but only two of them
# have been used for the logical volume)
```

```
pvs | egrep "PFree|$VG"
```

PV	VG	Fmt	Attr	PSize	PFree
/dev/sde1	testvg	lvm2	a--	1020.00m	764.00m
/dev/sde2	testvg	lvm2	a--	1020.00m	1020.00m
/dev/sde3	testvg	lvm2	a--	1020.00m	764.00m

```
lvdisplay -m /dev/$VG/$LV
```

```
--- Logical volume ---
```

```
LV Path                /dev/testvg/testlv
LV Name                 testlv
VG Name                testvg
LV UUID                Imu7dH-vBai-Nrxu-q2LZ-HKaH-ELja-xAS33r
LV Write Access        read/write
LV Creation host, time myserver.localdomain, 2016-02-23 16:34:19
```

```
+0100
```

```
LV Status              available
# open                 0
LV Size                512.00 MiB
Current LE             128
Segments               1
Allocation             inherit
Read ahead sectors    auto
- currently set to    512
Block device           253:8
```

```
--- Segments ---
```

```
Logical extents 0 to 127:
```

```
Type                  striped
Stripes                2
Stripe size           64.00 KiB
Stripe 0:
  Physical volume     /dev/sde1          <---
  Physical extents    0 to 63
Stripe 1:
  Physical volume     /dev/sde3          <---
  Physical extents    0 to 63
```

```
# Filesystem creation
```

```
mkfs -V -t $FSTYPE /dev/$VG/$LV
```

```
mkdir -p $MNTPT
```

```
mount /dev/$VG/$LV $MNTPT
```

```
chown $OWNER $MNTPT
```

```
# Check
```

```
df -h $MNTPT
```

```
ls -ld $MNTPT
```

```
# Add output of following command to /etc/fstab
```

```
echo "/dev/$VG/$LV          $MNTPT          $FSTYPE  
defaults          1 2"
```

```
# Mirrored
```

```
# -----  
-----
```

```
# Every day it is less common to build mirrored logical volumes  
because of the use of HW
```

```
# raids on local disks for OS, and SAN LUNs for data disks so we  
usually build concat
```

```
# logical volumes on already mirrored physical volumes. Anyway here  
is how to build a
```

```
# mirrored logical volume
```

```
MNTPT=/testmntpt
```

```
OWNER=testusr.testgrp
```

```
VG=testvg
```

```
LV=testlv
SIZE=512                # Final size in MBytes
FSTYPE=ext3             # ext4 can be created from RHEL 5 on
MIRRORS=1               # Number of mirror copies, in this case
a 2-way mirror.
DISKS="/dev/sde1 /dev/sde2"

# This is a simplified procedure for creating a mirrored logical
volume as many options are
# available for this type of volumes.

# For instance, we could consider using '--mirrorlog' option that
provides the ability of
# specifying the type of log to be used. If this options is not used,
it takes "disk" as
# default value that is persistent and it will require a small amount
of storage space,
# usually on a separate device from the data being mirrored (as we
took only two disks for
# the mirror, the log is created in the mirrored volume itself; if we
wanted the log to be
# on a separate disk we should have set "DISKS" variable like this:
# DISKS="/dev/sde1 /dev/sde2"; consider using a small disk for log).
#
# The segment type for the new implementation of mirroring is
"raid1". For the earlier
# implementation, the segment type is "mirror". On the new
implementation, the default is
# "raid1". To use the legacy "mirror" segment type use "--type
mirror" option.

# LV creation. Size given in Mbytes. To specify size in Logical
Extents use '-l'

lvcreate -L ${SIZE}M -n $LV -m $MIRRORS $VG $DISKS
Logical volume "testlv" created.
```

```
# Show LV
```

```
# Old implementation
```

```
lvdisplay -m /dev/$VG/$LV
```

```
--- Logical volume ---
```

```
LV Path                /dev/testvg/testlv
LV Name                 testlv
VG Name                testvg
LV UUID                FgqFKQ-kXEW-a9VF-PCX8-eggL-lvi2-BBx3lb
LV Write Access        read/write
LV Creation host, time myserver, 2016-02-23 17:20:12 +0100
LV Status               available
# open                 0
LV Size                512.00 MiB
Current LE             128
Mirrored volumes      2
Segments               1
Allocation             inherit
Read ahead sectors    auto
- currently set to    256
Block device           253:11
```

```
--- Segments ---
```

```
Logical extent 0 to 127:
  Type                mirror
  Mirrors              2
  Mirror size         128
  Mirror log volume    testlv_mlog
  Mirror region size   512.00 KiB
  Mirror original:
    Logical volume     testlv_mimage_0
    Logical extents    0 to 127
  Mirror destinations:
    Logical volume     testlv_mimage_1
    Logical extents    0 to 127
```

```
pvs | egrep "PFree|$VG"
```

PV	VG	Fmt	Attr	PSize	PFree
/dev/sde1	testvg	lvm2	a--	1.01g	520.00m
/dev/sde2	testvg	lvm2	a--	1.01g	516.00m
/dev/sde3	testvg	lvm2	a--	1.01g	1.01g

```
lvs
```

LV	VG	Attr	LSize	Pool	Origin	Data%	Move
testlv	testvg	mwi-a-m--	512.00m				
testlv_mlog						100.00	

```
# New implementation
```

```
lvdisplay -m /dev/$VG/$LV
```

```
--- Logical volume ---
```

```
LV Path                /dev/testvg/testlv
```

```
LV Name                 testlv
```

```
VG Name                 testvg
```

```
LV UUID                 kLpej7-9Kpv-re5p-9rU2-vWbx-m4BE-GpTKOh
```

```
LV Write Access         read/write
```

```
LV Creation host, time myserver.localdomain, 2016-02-23 17:20:10
```

```
+0100
```

```
LV Status                available
```

```
# open                    0
```

```
LV Size                  512.00 MiB
```

```
Current LE                128
```

```
Mirrored volumes         2
```

```
Segments                  1
```

```
Allocation                inherit
```

```
Read ahead sectors        auto
```

```
- currently set to        8192
```

```
Block device              253:12
```

```
--- Segments ---
```

```
Logical extents 0 to 127:
  Type                raid1
  Monitoring          monitored
  Raid Data LV 0
    Logical volume    testlv_rimage_0
    Logical extents   0 to 127
  Raid Data LV 1
    Logical volume    testlv_rimage_1
    Logical extents   0 to 127
  Raid Metadata LV 0 testlv_rmeta_0
  Raid Metadata LV 1 testlv_rmeta_1
```

```
pvs | egrep "PFree|$VG"
```

PV	VG	Fmt	Attr	PSize	PFree
/dev/sde1	testvg	lvm2	a--	1020.00m	504.00m
/dev/sde2	testvg	lvm2	a--	1020.00m	504.00m
/dev/sde3	testvg	lvm2	a--	1020.00m	1020.00m

```
lvs
```

LV	VG	Attr	LSize	Pool	Origin	Data%	Meta%	Move
testlv	testvg	rwi-a-r---	512.00m				100.00	

```
# Filesystem creation
```

```
mkfs -V -t $FSTYPE /dev/$VG/$LV
```

```
mkdir -p $MNTPT
```

```
mount /dev/$VG/$LV $MNTPT
```

```
chown $OWNER $MNTPT
```

```
# Check

df -h $MNTPT
ls -ld $MNTPT

# Add output of following command to /etc/fstab
echo "/dev/$VG/$LV          $MNTPT          $FSTYPE
defaults          1 2"
```

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