RHCS6: Mirror/unmirror a GFS2 volume

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RHCS: Mirror/unmirror a GFS2 volume

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# Tested on RHEL 6



# Mirroring
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# Given a simple gfs2 logical volume (note that type is 'linear' and
all extents are
# currently on a single physical volume):

lvdisplay -m /dev/gfstestvg/gfstestlv01
  --- Logical volume ---
  LV Path                /dev/gfstestvg/gfstestlv01
  LV Name                gfstestlv01
  VG Name                gfstestvg
  LV UUID                Ih02E9-62kI-JmLz-HSSJ-3fhn-t0wd-r73UxX
  LV Write Access        read/write
  LV Creation host, time myserver, 2014-10-09 15:24:28 +0200
  LV Status              available
  # open                 0
  LV Size                512.00 MiB
  Current LE             128
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     256
  Block device           253:7
```

```
  --- Segments ---
  Logical extent 0 to 127:
    Type               linear
    Physical volume    /dev/shared/sdd   <--- Current physical
volume
    Physical extents   0 to 127


# It makes no sense mirroring disk on current physical volume so we
have to look for a
# PV belonging to current volume group with enough free space to
allocate extents.
# If needed, add a new physical volume to the volume group

pvs
  PV             VG        Fmt  Attr PSize  PFree
  /dev/sda2      rootvg    lvm2 a--  15.50g 3.50g
  /dev/shared/sdc gfsvg    lvm2 a--   6.00g    0
  /dev/shared/sdd gfstestvg lvm2 a--   2.00g 1.50g    <--- current
physical volume
  /dev/shared/sde gfstestvg lvm2 a--   2.00g 2.00g    <--- pv with
free extents
  /dev/shared/sdf           lvm2 a--   1.00g 1.00g


# Let's mirror (one copy) our volume

lvconvert -m1 gfstestvg/gfstestlv01 /dev/shared/sde
  Shared cluster mirrors are not available.


# Ooops, something went wrong!

# In fact, we need cmirrord daemon to be running in order to mirror
and make work correctly
# any gfs2 mirrored volume. It tracks mirror log information on a
cluster and relies on
```

```
# 'cman' which must be running for cmirrord to function ('clvmd' is
also required).
# Install it if needed, "yum install cmirror"


# We start 'cmirrord', then, and enable the automatic start at boot
time:

service cmirrord start
   Starting cmirrord:                              [  OK  ]

chkconfig cmirrord on


# Then, we are ready for mirroring operation:

lvconvert -m1 gfstestvg/gfstestlv01 /dev/shared/sde
  gfstestvg/gfstestlv01: Converted: 3.1%
  gfstestvg/gfstestlv01: Converted: 5.1%
[...]
  gfstestvg/gfstestlv01: Converted: 97.3%
  gfstestvg/gfstestlv01: Converted: 100.0%


# Our mirrored volume

lvs
  LV          VG        Attr      LSize Pool Origin Data%  Move
Log              Cpy%Sync Convert
  gfstestlv01 gfstestvg mwi-a-m-- 512.00m
gfstestlv01_mlog   100.00     <----
  lv_depot    gfsvg     -wi-ao--- 6.00g
  lv_home     rootvg    -wi-ao--- 1.00g
  lv_opt      rootvg    -wi-ao--- 1.00g
  lv_root     rootvg    -wi-ao--- 1.00g
  lv_swap     rootvg    -wi-ao--- 2.00g
  lv_tmp      rootvg    -wi-ao--- 2.00g
  lv_usr      rootvg    -wi-ao--- 4.00g
```

```
  lv_var      rootvg    -wi-ao--- 1.00g


lvdisplay -m /dev/gfstestvg/gfstestlv01
[...]

  --- Segments ---
  Logical extent 0 to 127:
    Type                mirror
    Mirrors             2
    Mirror size         128
    Mirror log volume   gfstestlv01_mlog
    Mirror region size  512.00 KiB
    Mirror original:
      Logical volume    gfstestlv01_mimage_0
      Logical extents   0 to 127
    Mirror destinations:
      Logical volume    gfstestlv01_mimage_1
      Logical extents   0 to 127


pvs --segments -o+lv_name,seg_start_pe,segtype
  PV             VG        Fmt  Attr PSize    PFree    Start SSize
LV                    Start Type
[...]
  /dev/shared/sdd gfstestvg lvm2 a--     2.00g    1.50g     0   128
[gfstestlv01_mimage_0]     0 linear  <----
  /dev/shared/sdd gfstestvg lvm2 a--     2.00g    1.50g   128
383                           0 free
  /dev/shared/sde gfstestvg lvm2 a--     2.00g    1.49g     0   128
[gfstestlv01_mimage_1]     0 linear  <----
  /dev/shared/sde gfstestvg lvm2 a--     2.00g    1.49g   128     1
[gfstestlv01_mlog]         0 linear  <----
  /dev/shared/sde gfstestvg lvm2 a--     2.00g    1.49g   129
382                           0 free
  /dev/shared/sdf gfstestvg lvm2 a--  1020.00m 1020.00m     0
255                           0 free
```

```
# If we wanted to create a 3-side mirror (for example). We need two
disks in our volume
# group with enough free space to allocate the mirror copies:

pvs
  PV             VG        Fmt  Attr PSize    PFree
  /dev/sda2      rootvg    lvm2 a--    15.50g    3.50g
  /dev/shared/sdc gfsvg    lvm2 a--     6.00g       0
  /dev/shared/sdd gfstestvg lvm2 a--     2.00g    1.50g
  /dev/shared/sde gfstestvg lvm2 a--     2.00g    2.00g  <----
  /dev/shared/sdf gfstestvg lvm2 a--  1020.00m 1020.00m  <----


# Let's mirror (two copies) our volume

lvconvert -m2 gfstestvg/gfstestlv01 /dev/shared/sde /dev/shared/sdf
  gfstestvg/gfstestlv01: Converted: 4.7%
  gfstestvg/gfstestlv01: Converted: 12.5%
[...]
  gfstestvg/gfstestlv01: Converted: 93.8%
  gfstestvg/gfstestlv01: Converted: 100.0%


# Check

lvdisplay -m /dev/gfstestvg/gfstestlv01
[...]

  --- Segments ---
  Logical extent 0 to 127:
    Type                mirror
    Mirrors             3
    Mirror size         128
    Mirror log volume   gfstestlv01_mlog
    Mirror region size  512.00 KiB
    Mirror original:
```

```
      Logical volume    gfstestlv01_mimage_0
      Logical extents   0 to 127
    Mirror destinations:
      Logical volume    gfstestlv01_mimage_1
      Logical extents   0 to 127
      Logical volume    gfstestlv01_mimage_2
      Logical extents   0 to 127


pvs --segments -o+lv_name,seg_start_pe,segtype
  PV             VG        Fmt  Attr PSize    PFree   Start SSize
LV                   Start Type
[...]
  /dev/shared/sdd gfstestvg lvm2 a--     2.00g   1.50g     0   128
[gfstestlv01_mimage_0]     0 linear  <----
  /dev/shared/sdd gfstestvg lvm2 a--     2.00g   1.50g   128
383                          0 free
  /dev/shared/sde gfstestvg lvm2 a--     2.00g   1.50g     0   128
[gfstestlv01_mimage_1]     0 linear  <----
  /dev/shared/sde gfstestvg lvm2 a--     2.00g   1.50g   128
383                          0 free
  /dev/shared/sdf gfstestvg lvm2 a--  1020.00m 504.00m     0   128
[gfstestlv01_mimage_2]     0 linear  <----
  /dev/shared/sdf gfstestvg lvm2 a--  1020.00m 504.00m   128     1
[gfstestlv01_mlog]         0 linear  <----
  /dev/shared/sdf gfstestvg lvm2 a--  1020.00m 504.00m   129
126                          0 free




# Un-mirroring
# ------------------------------------------------------------------
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# Given a three side gfs2 logical volume (note that type is 'mirror'
and extents are
# on three different physical volume, original + 2 mirror copies):
```

```
lvdisplay -m /dev/gfstestvg/gfstestlv01
  --- Logical volume ---
  LV Path                /dev/gfstestvg/gfstestlv01
  LV Name                gfstestlv01
  VG Name                gfstestvg
  LV UUID                L35bR5-1sCH-aiK5-joH4-h674-mIvx-xZ3lx5
  LV Write Access        read/write
  LV Creation host, time cientouno, 2014-10-09 15:26:49 +0200
  LV Status              available
  # open                 0
  LV Size                512.00 MiB
  Current LE             128
  Mirrored volumes       3
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     256
  Block device           253:7

  --- Segments ---
  Logical extent 0 to 127:
    Type                mirror
    Mirrors             3
    Mirror size         128
    Mirror log volume   gfstestlv01_mlog
    Mirror region size  512.00 KiB
    Mirror original:
      Logical volume    gfstestlv01_mimage_0
      Logical extents   0 to 127
    Mirror destinations:
      Logical volume    gfstestlv01_mimage_1
      Logical extents   0 to 127
      Logical volume    gfstestlv01_mimage_2
      Logical extents   0 to 127

pvs --segments -o+lv_name,seg_start_pe,segtype
  PV             VG        Fmt  Attr PSize    PFree   Start SSize
```

```
LV                    Start Type
[...]
  /dev/shared/sdd gfstestvg lvm2 a--     2.00g   1.50g     0   128
[gfstestlv01_mimage_0]     0 linear  <----
  /dev/shared/sdd gfstestvg lvm2 a--     2.00g   1.50g   128
383                           0 free
  /dev/shared/sde gfstestvg lvm2 a--     2.00g   1.50g     0   128
[gfstestlv01_mimage_1]     0 linear  <----
  /dev/shared/sde gfstestvg lvm2 a--     2.00g   1.50g   128
383                           0 free
  /dev/shared/sdf gfstestvg lvm2 a--  1020.00m 504.00m     0   128
[gfstestlv01_mimage_2]     0 linear  <----
  /dev/shared/sdf gfstestvg lvm2 a--  1020.00m 504.00m   128     1
[gfstestlv01_mlog]         0 linear  <----
  /dev/shared/sdf gfstestvg lvm2 a--  1020.00m 504.00m   129
126                           0 free


# Let's reduce one of the copies:

lvconvert -m1 gfstestvg/gfstestlv01 /dev/shared/sdf
  Logical volume gfstestlv01 converted.


# Check

lvdisplay -m /dev/gfstestvg/gfstestlv01
[...]

  --- Segments ---
  Logical extent 0 to 127:
    Type                mirror
    Mirrors             2
    Mirror size         128
    Mirror log volume   gfstestlv01_mlog
    Mirror region size  512.00 KiB
    Mirror original:
      Logical volume    gfstestlv01_mimage_0
```

```
      Logical extents   0 to 127
    Mirror destinations:
      Logical volume    gfstestlv01_mimage_1
      Logical extents   0 to 127


pvs
  PV             VG        Fmt  Attr PSize    PFree
  /dev/sda2      rootvg    lvm2 a--    15.50g    3.50g
  /dev/shared/sdc gfsvg     lvm2 a--     6.00g       0
  /dev/shared/sdd gfstestvg lvm2 a--     2.00g    1.50g
  /dev/shared/sde gfstestvg lvm2 a--     2.00g    1.50g
  /dev/shared/sdf gfstestvg lvm2 a--  1020.00m 1020.00m  <----
Reduced


pvs --segments -o+lv_name,seg_start_pe,segtype | grep gfstestvg
  /dev/shared/sdd gfstestvg lvm2 a--     2.00g    1.50g     0   128
[gfstestlv01_mimage_0]     0 linear
  /dev/shared/sdd gfstestvg lvm2 a--     2.00g    1.50g   128
383                          0 free
  /dev/shared/sde gfstestvg lvm2 a--     2.00g    1.50g     0   128
[gfstestlv01_mimage_1]     0 linear
  /dev/shared/sde gfstestvg lvm2 a--     2.00g    1.50g   128
383                          0 free
  /dev/shared/sdf gfstestvg lvm2 a--  1020.00m 1016.00m     0
128                          0 free
  /dev/shared/sdf gfstestvg lvm2 a--  1020.00m 1016.00m   128     1
[gfstestlv01_mlog]         0 linear
  /dev/shared/sdf gfstestvg lvm2 a--  1020.00m 1016.00m   129
126                          0 free


# And, finally, completely remove the mirror:

lvconvert -m0 gfstestvg/gfstestlv01 /dev/shared/sde
  Logical volume gfstestlv01 converted.
```

```
# Check

lvdisplay -m /dev/gfstestvg/gfstestlv01
  --- Logical volume ---
  LV Path                /dev/gfstestvg/gfstestlv01
  LV Name                gfstestlv01
  VG Name                gfstestvg
  LV UUID                L35bR5-1sCH-aiK5-joH4-h674-mIvx-xZ3lx5
  LV Write Access        read/write
  LV Creation host, time cientouno, 2014-10-09 15:26:49 +0200
  LV Status              available
  # open                 0
  LV Size                512.00 MiB
  Current LE             128
  Segments               1
  Allocation             inherit
  Read ahead sectors     auto
  - currently set to     256
  Block device           253:7

  --- Segments ---
  Logical extent 0 to 127:
    Type                linear
    Physical volume     /dev/shared/sdd
    Physical extents    0 to 127


pvs
  PV             VG        Fmt  Attr PSize    PFree
  /dev/sda2      rootvg    lvm2 a--    15.50g    3.50g
  /dev/shared/sdc gfsvg     lvm2 a--     6.00g       0
  /dev/shared/sdd gfstestvg lvm2 a--     2.00g    1.50g
  /dev/shared/sde gfstestvg lvm2 a--     2.00g    2.00g  <----
Reduced
  /dev/shared/sdf gfstestvg lvm2 a--  1020.00m 1020.00m
```

```
pvs --segments -o+lv_name,seg_start_pe,segtype | grep gfstestvg
  /dev/shared/sdd gfstestvg lvm2 a--     2.00g    1.50g     0   128
gfstestlv01     0 linear
  /dev/shared/sdd gfstestvg lvm2 a--     2.00g    1.50g   128
383                0 free
  /dev/shared/sde gfstestvg lvm2 a--     2.00g    2.00g     0
511                0 free
  /dev/shared/sdf gfstestvg lvm2 a--  1020.00m 1020.00m     0
255                0 free
```