UMCSGKBRC00008685  
Mirror Disk Replacement In A ServiceGuard Volume Group
Document Information Table
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PROBLEM

I need to **replace** a **mirror** disk that has become defective. The disk is part of a volume group used in a **ServiceGuard** cluster. Is there a procedure for doing this?

RESOLUTION

There are two tactics to consider to **replace** a defective **mirror** disk.

- Remove the disk from the volume group before **replacing** it.
  This is less error-prone because it does not depend on the **vgcfgbackup** file for the volume group to be accurate, nor does it depend on the **vgcfgrestore** command to properly restore the LVM structures.

- **Replace** the disk while a member of the volume group.
  The vgcfgbackup file for the volume group must be current! If a vgcfgbackup cannot execute because of the **mirror** disk, use the previous method.

NOTES:

- LVM commands in this document demonstrate syntax. Naturally, the reader should use values valid for the situation.

- The procedures in this document are performed on only one node in the cluster. There is no need to reconfigure the other nodes in the cluster if the repair is successful.

Removing the disk from the volume group
In this strategy, 'lvreduce' and 'vgreduce' commands are used on one server only. This will negate the **mirror** on the disk and remove the disk from the **/etc/lvmtab** file on that server but not on the other adoptive nodes. The disk is then **replaced**, **pvcreate**d, **vgextend**ed back into the volume group and then **lvextend**ed as a **mirror** to each logical volume it's predecessor used to protect. It is possible to remove a disk from an active VG when the disk has no active logical extents.

Process:
1. On the server where the package is active, lvreduce the **mirrors** off of the disk:

```
# lvreduce -m 0 /dev/vg02/lvol1 /dev/dsk/c6t4d0
```

   Repeat as needed for all logical volumes on the defective disk.
   To determine which logical volumes are **mirrored**, use lvdisplay, looking for 2x or 3x as many "Allocated PE" as "Current LE"
   Use pvdisplay to determine which LVOLs are **mirrored** on the disk.

2. The disk can be removed from the volume group while the package is running:

```
# vgreduce /dev/vg02 /dev/dsk/c6t4d0
# strings /etc/lvmtab
```

The disk path should be gone from the file.

3. If the disk is hot-swappable, **replace** it at this time. If not, the **ServiceGuard** package must be halted and the disk chassis powered down before **replacing** the disk.

4. Once the disk is **replaced**, load it with an LVM structure and adopt it back into the volume group and **mirror** to logical volumes:

```
# pvcreate -f /dev/rdsk/c6t4d0
# vgchange -a e vg02  # if the VG was deactivated previously
# vgextend /dev/vg02 /dev/dsk/c6t4d0
# lvextend -m 1 /dev/vg02/lvol1 /dev/dsk/c6t4d0
```

Repeat the **mirroring** for each logical volume as needed.
NOTE: creating a **mirror** may take tens of minutes

If the package was halted to complete this process, deactivate the VG and start the package.

--- end of process in this secton ---

Replacing a disk without removing it from the VG.

In this strategy, the system administrator relies upon a current vgcfgbackup file for the volume group of the defective disk as well as a functional vgcfgrestore (vgcfgrestore may require a patch).

Process:

1. If the disk is hot-swappable, **replace** it at this time. If not, the **ServiceGuard** package must be halted and the disk chassis powered down before **replacing** the disk.

2. With a new disk in place, perform the vgcfgrestore command to **replace** the LVM structures on the disk:

```
# vgcfgrestore -n vg02 /dev/rdsk/c6t4d0
```

3. Insure all of the disks in the VG have the cluster ID loaded:

```
# vgchange -c y vg02
```

ServiceGuard *must be running on this node for the "-c y" to succeed.*

4. Activate the volume group to verify LVM accepts the disk in the VG.

```
# vgchange -a e vg02
```

ServiceGuard *must be running on this node for the "-a e" to succeed.*

5. The vgsync command synchronizes the physical extents of each **mirrored** logical volume in the volume group. Synchronization may take tens of minutes.

```
# vgsync vg02
```

6. Check successful completion:

```
 # pvdisplay -v /dev/dsk/c6t4d0 | grep stale

No stale extents should exist.  When complete, deactivate the VG and
start the package on a node.


See also LVMKBRC00006111 and  LVMKBRC00006130

                            ### END ###
```

ALT KEYWORDS

uxsg umcsg