How to Mirror a Boot Disk Drive
(as of: 6/14/2010)

Initial steps

1. Assumptions:
   - `/dev/vg00` is the name of the root volume
   - `/dev/dsk/c0t6d0` is the current functioning disk drive
   - `/dev/dsk/c0t4d0` is the unused drive that will be used for mirroring, it is at least as large as the current disk, it is visible to the system (via ioscan)
   - Mirrordisk/UX is installed
     ```
     # swlist -l product | grep -i mirror
     ```
2. Confirm that the system thinks that the current functioning disk drive is bootable
   ```
   # lvlnboot –v
   # setboot
   ```
3. Record what LVM thinks comprises vg00
   ```
   # strings /etc/lvmtab
   ```
4. Record the **lvol sequence** of the current disk drive
   ```
   # pvdisplay –v /dev/dsk/c0t6d0 | more
   ```

Getting started

1. Check with diskinfo, pvdisplay to ensure you have the right disk
   ```
   # ioscan –funC disk
   # diskinfo /dev/rdsk/c0t4d0
   # pvdisplay –v /dev/dsk/c0t4d0
   ```
   (This command will fail when a disk is totally empty. In this case, it confirms that the right disk is being targeted for mirroring.)

2. Write new LVM headers onto the drive, indicating it is to be bootable
   ```
   # pvcreate –fB /dev/rdsk/c0t4d0
   ```

3. Add the disk to the volume group
   ```
   # vgextend /dev/vg00 /dev/dsk/c0t4d0
   ```

4. Place the boot utilities in boot area of the disk and update the autoboot file
   ```
   # mkboot /dev/rdsk/c0t4d0
   # mkboot -a "hpux –lq" /dev/rdsk/c0t4d0
   ```
   (-lq = loss of quorum. This allows the system to boot without both drives being present)
   Repeat "`mkboot –a`" onto the current drive if necessary.
   To check the boot string on both drives
   ```
   # lifcp /dev/rdsk/c0t4d0:AUTO -
   # lifcp /dev/rdsk/c0t6d0:AUTO -
   ```

5. Confirm the new disk is part of volume group
   ```
   # vgdisplay –v /dev/vg00
   ```

6. Using the pvdisplay data obtained in the initial steps section, create the logical volumes in the SAME SEQUENCE on the new drive
   ```
   # lvextend -m 1 /dev/vg00/lvol1 /dev/dsk/c0t4d0
   ```

```
# lvextend -m 1 /dev/vg00/lvol2 /dev/dsk/c0t4d0
# lvextend -m 1 /dev/vg00/lvol3 /dev/dsk/c0t4d0
# lvextend -m 1 /dev/vg00/lvol4 /dev/dsk/c0t4d0
# lvextend -m 1 /dev/vg00/lvol5 /dev/dsk/c0t4d0
```

7. Prepare the lvols to be boot, root, swap and dump

```
# lvlnboot -b /dev/vg00/lvol1
# lvlnboot -r /dev/vg00/lvol3
# lvlnboot -s /dev/vg00/lvol2
# lvlnboot -d /dev/vg00/lvol2
```

Check with lvlnboot -v to make sure the system sees both disks

```
# lvlnboot -v /dev/vg00

Boot Definitions for Volume Group /dev/vg00:
Physical Volumes belonging in Root Volume Group:
        /dev/dsk/c0t6d0 (10/0.6.0) -- Boot Disk
        /dev/dsk/c0t4d0 (10/0.4.0) -- Boot Disk
Boot: lvol1     on:     /dev/dsk/c0t6d0
                        /dev/dsk/c0t4d0
Root: lvol3     on:     /dev/dsk/c0t6d0
                        /dev/dsk/c0t4d0
Swap: lvol2     on:     /dev/dsk/c0t6d0
                        /dev/dsk/c0t4d0
Dump: lvol2     on:     /dev/dsk/c0t6d0, 0
                        /dev/dsk/c0t4d0, 0
```

8. Check one of the lvols to confirm that the status of both disks is available and current NOT stale

```
# lvdisplay -v /dev/vg00/lvol1 | more
--- Logical volumes ---
LV Name                     /dev/vg00/lvol1
VG Name                     /dev/vg00
LV Permission               read/write
LV Status                   available/syncd
Mirror copies               1
Consistency Recovery        MWC
Schedule                    parallel
LV Size (Mbytes)            100
Current LE                  25
Allocated PE                50
Stripes                     0
Stripe Size (Kbytes)        0
Bad block                   off
Allocation                  strict/contiguous
IO Timeout (Seconds)        default

   --- Distribution of logical volume ---
   PV Name            LE on PV  PE on PV
   /dev/dsk/c0t6d0    25        25
   /dev/dsk/c0t4d0    25        25

   --- Logical extents ---
   LE    PV1                PE1   Status 1 PV2                PE2   Status 2
   00000 /dev/dsk/c0t6d0    00000 current  /dev/dsk/c0t4d0    00000 current
   00001 /dev/dsk/c0t6d0    00001 current  /dev/dsk/c0t4d0    00001 current
   00002 /dev/dsk/c0t6d0    00002 current  /dev/dsk/c0t4d0    00002 current
   00003 /dev/dsk/c0t6d0    00003 current  /dev/dsk/c0t4d0    00003 current
   00004 /dev/dsk/c0t6d0    00004 current  /dev/dsk/c0t4d0    00004 current
```

9. Set the new disk to be secondary boot device and check

```
# setboot -a 10/0.4.0
# setboot
Primary bootpath : 10/0.6.0
Alternate bootpath : 10/0.4.0

Autoboot is ON (enabled)
Autosearch is OFF (disabled)
```