

## How to bring up HAL firmware after booting with HDDs unplugged

If NAS can not boot, generally we can use following steps to retrieve volume data by manually

1. Power down the NAS. And then plug out all Host disks.
2. Power on the NAS.
3. When system is ready, connect and login the NAS by using ssh with admin account.
4. Plug in all host disks one by one.
5. Check the **/etc/enclosure\_0.conf** to see if all host disks are all detected.
6. Execute **"storage\_util --sys\_startup"**
7. /dev/md9 and /dev/md13 should be assembled in this step.
8. /dev/md9 should be mounted to /mnt/HDA\_ROOT
9. If /dev/md9 is not assembled normally, please refer to appendix page at end for details.
10. If /dev/md13 is not assembled normally, issue following example command to re-create it:  
Example: TS-469. disk1(/dev/sda), disk2(/dev/sdb), disk3(missing), disk4(missing)  
**[~] # /sbin/mdadm -CfR /dev/md13 -e 1.0 -z 458880 --bitmap=internal --write-behind --level=1 --chunk=64 --raid-devices=4 /dev/sda4 /dev/sdb4 missing missing**
11. Execute **"storage\_util --sys\_startup\_p2"**
12. All volumes should can be mounted in this step.
  - o If not, it's needed to try to mount them by manually.  
For example:  
Legacy MD volume:  
**mount -t ext4 /dev/md0 /share/MD0\_DATA**  
  
Flexible LVM volume:  
**mount -t ext4 /dev/mapper/cachedev1 /share/CACHEDEV1\_DATA**
13. If it's still can't be mounted successfully, maybe filesystem superblock is corrupted.  
Check with **dumpe2fs\_64** and **e2fsck\_64**
14. Execute **"/etc/init.d/mountall"**
15. /dev/md13 should be mounted to /mnt/ext
16. Execute **"/etc/init.d/smb.sh start"** to start the SAMBA service.
17. User data can be retrieved by SAMBA service if /etc/config/smb.conf is correct
18. Or, you may proceed with manual firmware re-update if previous firmware update was faulty

## Example

```
[~] # cat /etc/enclosure_0.conf
```

```
[Index]
```

```
pd_bitmap=0x2  
pd_sysid_sg1=1
```

```
[PhysicalDisk_1]
```

```
port_id=1  
pd_sys_id=sg1  
enc_sys_id=root  
pd_sys_name=/dev/sdb
```

```
...
```

```
...
```

```
[~] # storage_util --sys_startup
```

```
Detect disk(8, 0)...  
ignore non-root enclosure disk(8, 0).  
Detect disk(8, 16)...  
...
```

```
...
```

```
[~] # df
```

Filesystem	Size	Used	Available	Use%	Mounted on
/dev/ram0	151.1M	130.8M	20.3M	87%	/
devtmpfs	909.2M	4.0k	909.2M	0%	/dev
tmpfs	64.0M	224.0k	63.8M	0%	/tmp
tmpfs	32.0M	0	32.0M	0%	/.eaccelerator.tmp
/dev/md9	509.5M	198.7M	310.8M	39%	/mnt/HDA_ROOT

```
[~] # storage_util --sys_startup_p2
```

```
sys_startup_p2:got called count = 1  
Perform NAS model checking...  
NAS model match, skip model migration.
```

```
[~] # df
```

Filesystem	Size	Used	Available	Use%	Mounted on
/dev/ram0	151.1M	138.8M	12.3M	92%	/
devtmpfs	909.2M	4.0k	909.2M	0%	/dev
tmpfs	64.0M	208.0k	63.8M	0%	/tmp
tmpfs	32.0M	0	32.0M	0%	/.eaccelerator.tmp
/dev/md9	509.5M	198.7M	310.8M	39%	/mnt/HDA_ROOT
/dev/mapper/cachedev1	1.7T	5.8G	1.7T	0%	/share/CACHEDEV1_DATA

```
[~] # /etc/init.d/mountall
Update Extended /flashfs_tmp/boot/rootfs_ext.tgz...
...
```

```
...
[~] # df
Filesystem                Size      Used Available Use% Mounted on
/dev/ram0                  151.1M    130.8M     20.3M   87% /
devtmpfs                   909.2M      4.0k    909.2M    0% /dev

tmpfs                      64.0M     224.0k     63.8M    0% /tmp
tmpfs                      32.0M          0     32.0M    0% /.eaccelerator.tmp
/dev/md9                   509.5M    198.7M     310.8M   39% /mnt/HDA_ROOT

/dev/mapper/cachedev1     1.7T       5.8G     1.7T    0% /share/CACHEDEV1_DATA
/dev/md13                  364.2M    177.5M     186.7M   49% /mnt/ext
```

```
[~] # /etc/init.d/smb.sh start
```

```
Starting winbindd services:Starting SMB services:.
```

```
[~] #
```

```
[~] # ps |grep smbd
```

```
20635 admin      6424 S   /usr/local/samba/sbin/smbd -l /var/log -D -s
/etc/config/smb.conf
20642 admin      3912 S   /usr/local/samba/sbin/smbd -l /var/log -D -s
/etc/config/smb.conf
```

```
20643 admin      3896 S   /usr/local/samba/sbin/smbd -l /var/log -D -s
/etc/config/smb.conf
```

```
20806 admin      544 S   grep smbd
```

## Appendix: How to recover .conf (md9 fail to auto-assemble)

- Try to mount 1st partition of any disk
  1. Please open /etc/enclosure\_0.conf to get the correct disk mapping name.

```
[PhysicalDisk_1]
port_id=1
pd_sys_id=sg6
enc_sys_id=root
pd_sys_name=/dev/sdg
```

2. Example command of mount Disk1 1st partition.

```
[~] # /bin/mount /dev/sdg1 /mnt/sdg_root
```

- Try to read /mnt/sdg\_root/.conf

```
[~] # cat /mnt/sdg_root/.conf
```
- It should be a valid text file. If .conf file is is garbled, remove it and try to re-generate it.
- Example of HAL support firmware(SMB):
  1. MAC address 1: 00:08:9B:CB:A3:EA
  2. World wide name of DISK1: 50014EE25C0D43B9
  3. World wide name of DISK2: 5000C5004EE02CCB
  4. World wide name of DISK3: 5000CCA378EF2455
  5. World wide name of DISK4: 50014EE2B21AEE7C
  6. To get the correct disk WWN, please refer to /etc/enclosure\_0.conf.

```
[~] # cat /mnt/sdg_root/.conf
hw_addr=00:08:9B:CB:A3:EA
QNAP=TRUE
mirror=0
hal_support=yes
sm_v2_support=yes
pd_dev_wwn_50014EE25C0D43B9=0x1
pd_dev_wwn_5000C5004EE02CCB=0x2
pd_dev_wwn_5000CCA378EF2455=0x3
pd_dev_wwn_50014EE2B21AEE7C=0x4
```

- Mount each disk 1st partition
- Copy this new .conf to each disk 1st partition