Hydra LAN - RAID Recovery

This article shows a possible way to rescue a RAID array that is not recognized by the system any more. In order to follow these steps, the SSH server on the Hydra LAN has to be enabled and a command console is required to type in the commands as seen below.

For the Mac, use the "Terminal" program that comes with the Operating System. For the PC, search for and download a program such as "Putty" and install it on the computer.

1. Enable the SSH server. Login to your Hydra LAN via web browser, go to Network Service and SSH Server. Enable the SSH Server and save the setting.

2. Start the "Terminal" on the Mac or "Putty" on the PC and connect to your Hydra LAN via SSH connection. In the Terminal, type "ssh 192.168.1.5 -l root" but without the quotation marks and replace the IP address with that of your Hydra LAN. In Putty, type the IP address of your Hydra LAN in the Host Name field, select SSH and Open the connection.

3. The login is "root" and the password is the same as the administrator password. By default, the password would therefore be "admin".

4. From now on, commands will be enclosed in quotation marks. When you type them in the command console, the command has to be entered without those quotation marks.

5. Use the command "df" to check which of the file system(s) is missing. By default, both /dev/md0 and /dev/md1 should be listed.

   HYDRA-LAN> df
Filesystem	1k-blocks	Used	Available	Use%	Mounted on
/dev/md0	521576	29392	465688	6%	/system
/dev/md1	229863948	551576	217635940	0%	/mnt/md1

6. In this example, we will assume that /dev/md1 has not been found. If both are missing, run the commands twice, first for md0 and second for md1.

7. Type "umount /mnt/md1/" in order to safely disconnect the volume. Skip this step for md0, this is only necessary for md1.

   HYDRA-LAN > umount /mnt/md1/

8. Type "mdadm --stop /dev/md1" to safely stop it.

    HYDRA-LAN > mdadm --stop /dev/md1
    md: md1 stopped.
    md: unbind<sdd2>
    md: export_rdev(sdd2)
    md: unbind<sda2>
    md: export_rdev(sda2)
    md: unbind<sdb2>
    md: export_rdev(sdb2)

9. Type following command in order to re-create the RAID array: "mdadm --create --assume-clean /dev/md1 -l5 -n4 /dev/sdd2 /dev/sdc2 /dev/sdb2 /dev/sda2".

    Depending on your setup, the command will slightly vary from this example:
    "-l5" stands for RAID 5, for RAID 0 use "-l0" and for JBOD use "-llinear"
    "-n4" stands for 4 hard drives, use "-n2" for 2 drives instead
    "sda2", "sdb2", "sdc2" and "sdd2" depend on the amount of drives and the RAID mode, please refer to the table at the end of this article

    HYDRA-LAN > mdadm --create --assume-clean /dev/md1 -l5 -n4 /dev/sdd2 /dev/sdc2 /dev/sdb2 /dev/sda2
    mdadm: /dev/sdd2 appears to contain an ext2fs file system
               size=233528640K mtime=Thu Mar 12 16:04:12 2009
    mdadm: /dev/sdd2 appears to be part of a raid array:
               level=raid5 devices=4 ctime=Thu Mar 12 16:47:16 2009
    mdadm: /dev/sdc2 appears to be part of a raid array:
               level=raid5 devices=4 ctime=Thu Mar 12 16:47:16 2009
    mdadm: /dev/sdb2 appears to be part of a raid array:
               level=raid5 devices=4 ctime=Thu Mar 12 16:47:16 2009
    mdadm: /dev/sda2 appears to contain an ext2fs file system
               size=233528640K mtime=Thu Mar 12 16:04:12 2009
    mdadm: /dev/sda2 appears to be part of a raid array:
               level=raid5 devices=4 ctime=Thu Mar 12 16:47:16 2009
    mdadm: largest drive (/dev/sdd2) exceed size (77842880K) by more than 1%
    Continue creating array? **Y**　**(type Y in order to continue)**
    md: bind<sdd2>
    md: bind<sdc2>
    md: bind<sdb2>
    md: bind<sda2>
    raid5: device sda2 operational as raid disk 3
    raid5: device sdb2 operational as raid disk 2
    raid5: device sdc2 operational as raid disk 1

raid5: device sdd2 operational as raid disk 0
raid5: allocated 4202kB for md1
raid5: raid level 5 set md1 active with 4 out of 4 devices, algorithm 2
RAID5 conf printout:
 --- rd:4 wd:4 fd:0
 disk 0, o:1, dev:sdd2
 disk 1, o:1, dev:sdc2
 disk 2, o:1, dev:sdb2
 disk 3, o:1, dev:sda2
mdadm: array /dev/md1 started.

10. Type "cat /proc/mdstat" to check the current status. You should now be able to see both md0 and md1 active again.

HYDRA-LAN > cat /proc/mdstat
Personalities : [linear] [raid0] [raid1] [raid5] [multipath] [raid10]
md1 : active raid5 sda2[3] sdb2[2] sdc2[1] sdd2[0]
    233528640 blocks level 5, 64k chunk, algorithm 2 [4/4] [UUUU]

md0 : active raid5 sdd1[0] sda1[3] sdb1[2]
    529920 blocks level 5, 64k chunk, algorithm 2 [4/3] [U_UU]

unused devices: <none>

11. Mount the previously missing RAID array.
For md0, type "mount /dev/md0 /system/".
For md1, type "ls /mnt/" and use the result like "ide1" or "md1" to mount it with following command "mount /dev/md1 /mnt/md1/"

HYDRA-LAN > mount /dev/md1 /mnt/md1/
ext3: No journal on filesystem on md1

12. Use the "df" command to check the current status. If you see both file systems and both are mounted, the recovery has been successful.

HYDRA-LAN > df
Filesystem   1k-blocks   Used Available Use% Mounted on
/dev/md0   521576   29392   465688   6% /system
/dev/md1   229863948   551576 217635940   0% /mnt/md1

13. Restart the Hydra LAN by typing the command "reboot" and then try accessing the files again.

HYDRA-LAN > reboot

Drive Label Reference for Step 9

RAID MODE	HDD Qty.	Drive Label			
SPAN	2	md0	sdb1	sdb2	
		md1	sda3	sdb3	
	3	md0	sdc1	sdc2	
		md1	sda3	sdb3	sdc3
	4	md0	sdd1	sdd2	
		md1	sda3	sdb3	sdc3	sdd3

RAID MODE	HDD Qty.	Drive Label			
RAID 0	2	md0	sda1	sdb1	
		md1	sda2	sdb2	
	3	md0	sda1	sdb1	sdc1
		md1	sda2	sdb2	sdc2
	4	md0	sda1	sdb1	sdc1	sdd1
		md1	sda2	sdb2	sdc2	sdd2

RAID MODE	HDD Qty.	Drive Label			
RAID 1	2	md0	sda1	sdb1	
		md1	sda2	sdb2	

RAID MODE	HDD Qty.	Drive Label			
RAID 5	3	md0	sda1	sdb1	sdc1
		md1	sda2	sdb2	sdc2
	4	md0	sda1	sdb1	sdc1	sdd1
		md1	sda2	sdb2	sdc2	sdd2