

# Software RAID troubleshoot

Once, after upgrading my desktop slackware64 from 14.1 to 14.2 (with kernel upgrade too), i be done with system, who,after lilo menu, write "loading kernel ....."

and then stops completely - nothing more.

Initial configuration was:

Intel DG965SS motherboard, core 2 duo 2.2 GHz E4500 CPU, 8 Gb RAM,  
2 x 1000 Gb Seagate SATA HDD ( as sda and sdb)

ST1000DM003-1CH1

dvd-writer on sata4 port

both seagate discs is partitioned as FD type ( linux autodetect raid) and 4 partitions ( mbr type) -

- 100 Gb root (md1)
- 2 Gb swap (md2)
- 350 Gb /home (md3)
- 550 Gb /Second (md4)

cat /proc/mdstat :

```
Personalities : [linear] [raid0] [raid1] [raid10] [raid6] [raid5] [raid4]
[multipath]
md1 : active raid1 sda1[0] sdb1[1]
      104857536 blocks [2/2] [UU]

md2 : active raid1 sda2[0] sdb2[1]
      2097088 blocks [2/2] [UU]

md3 : active raid1 sda3[0] sdb3[1]
      367001536 blocks [2/2] [UU]

md4 : active raid1 sda4[0] sdb4[1]
      502805120 blocks [2/2] [UU]

unused devices: <none>
```

mdadm -Es :

```
ARRAY /dev/md1 UUID=7cc47bea:832f8260:208cdb8d:9e23b04b
ARRAY /dev/md2 UUID=cce81d3a:78965aa5:208cdb8d:9e23b04b
ARRAY /dev/md3 UUID=f0bc71fc:8467ef54:208cdb8d:9e23b04b
ARRAY /dev/md4 UUID=3f4daae2:cbf37a2a:208cdb8d:9e23b04b
```

```
# for p in 1 2 3 4; do mdadm --create /dev/md$p --name=$p --level=1 --raid-  
devices 2 /dev/sda$p /dev/sdb$p --metadata=0.90; done
```

## My "fall" and "sucess" story

I have slackware64 14.1 system with raid1 on two discs.  
no any mdadm.conf configuration, no any initrd -i use "huge" kernel, and all just works right.  
Then i do massive system update via slackpkg update-all, including kernel update too.  
check lilo.conf, restart - all looks ok. then i decide to upgrade system to 14.2 via the same slackpkg  
( looks like live on macos is too boring, too predictable - all work, and so on...:D )  
always, i check lilo.conf, check the new kernel is named right, have no old kernel for backup -  
only one entry in lilo ( who was not good thing at all! ), and do reboot.  
Then all interesting things start!!! :)

I have LiLo menu, kernel start loading...  
it show lots of "..." but then all stop, and nothing more do.  
That was indicated some problems with lilo updating, i suppose.  
I want to boot, and re-run lilo -v  
As so, i booting from Slackware64 Live CD <http://bear.alienbase.nl/mirrors/slackware-live/> from  
AlienBob, and try mount my root partition for run lilo again.

But - there was a big problem!  
there no my /dev/md1, /dev/md2, /dev/md3 and /dev/md4 after i load via slackware live CD!  
and my lilo.conf was that:

```
# LIL0 configuration file  
# generated by 'liloconfig'  
#  
# Start LIL0 global section  
# Append any additional kernel parameters:  
append=" vt.default_utf8=1"  
boot = /dev/sda  
  
#compact          # faster, but won't work on all systems.  
  
# Boot BMP Image.  
# Bitmap in BMP format: 640x480x8  
  bitmap = /boot/slack.bmp  
# Menu colors (foreground, background, shadow, highlighted  
# foreground, highlighted background, highlighted shadow):  
  bmp-colors = 255,0,255,0,255,0  
# Location of the option table: location x, location y, number of  
# columns, lines per column (max 15), "spill" (this is how many  
# entries must be in the first column before the next begins to  
# be used. We don't specify it here, as there's just one column.  
  bmp-table = 60,6,1,16
```

```
# Timer location x, timer location y, foreground color,  
# background color, shadow color.  
  bmp-timer = 65,27,0,255  
  
# Standard menu.  
# Or, you can comment out the bitmap menu above and  
# use a boot message with the standard menu:  
#message = /boot/boot_message.txt  
  
# Wait until the timeout to boot (if commented out, boot the  
# first entry immediately):  
prompt  
# Timeout before the first entry boots.  
# This is given in tenths of a second, so 600 for every minute:  
timeout = 1200  
# Override dangerous defaults that rewrite the partition table:  
change-rules  
  reset  
# Normal VGA console  
vga = normal  
# Ask for video mode at boot (time out to normal in 30s)  
#vga = ask  
# VESA framebuffer console @ 1024x768x64k  
#vga=791  
# VESA framebuffer console @ 1024x768x32k  
#vga=790  
# VESA framebuffer console @ 1024x768x256  
#vga=773  
# VESA framebuffer console @ 800x600x64k  
#vga=788  
# VESA framebuffer console @ 800x600x32k  
#vga=787  
# VESA framebuffer console @ 800x600x256  
#vga=771  
# VESA framebuffer console @ 640x480x64k  
#vga=785  
# VESA framebuffer console @ 640x480x32k  
#vga=784  
# VESA framebuffer console @ 640x480x256  
#vga=769  
# End LILO global section  
# Linux bootable partition config begins  
image = /boot/vmlinuz  
  root = /dev/md1  
  label = Linux  
  read-only  
# Linux bootable partition config ends
```

so i do some research, do

```
dmesg | grep md
```

and from array size found out, what number was my root partition ( it was 100 gb size). it was md126.  
i mount it:

```
mount /dev/md126 /mnt/hd
```

Then i run mc, and check, i was really mount there my root partition.

Then i do in console :

```
chroot /mnt/hd /sbin/lilo -v 3
```

but - lilo command end with error - it was cannot find root partition - /dev/md1.

That was problem, because now /dev/md1 was become as /dev/md126 for whatever reason.  
Then, i do some reading about RAID subsystems, forums and so on, made some mistakes and experiments, who resulted on these shortcuts:

I made array assembling strings in mdadm.conf via do these comands in terminal:

```
mdadm -Db /dev/md127 >> /mnt/hd/etc/mdadm.conf  
  
mdadm -Db /dev/md126 >> /mnt/hd/etc/mdadm.conf  
mdadm -Db /dev/md125 >> /mnt/hd/etc/mdadm.conf  
mdadm -Db /dev/md124 >> /mnt/hd/etc/mdadm.conf
```

In a result i get something like that in end of mdadm.conf:

```
ARRAY /dev/md125 metadata=0.90 UUID=7cc47bea:832f8260:208cdb8d:9e23b04b  
#this one is 100 gb partition: \ (md1)  
ARRAY /dev/md124 metadata=0.90 UUID=f0bc71fc:8467ef54:208cdb8d:9e23b04b #  
375 gb partition - \home - md3  
ARRAY /dev/md126 metadata=0.90 UUID=3f4daae2:cbf37a2a:208cdb8d:9e23b04b #  
514 Gb partition - \Second - md4  
ARRAY /dev/md127 metadata=0.90 UUID=cce81d3a:78965aa5:208cdb8d:9e23b04b # 2  
Gb partition - swap - md2
```

then, based on :

```
dmesg | grep md
```

and /mnt/hd/etc/fstab i found out which md12x must be md1, md2, md3 and md4, and write it there after # as shown above.

Then i edit it to become in right way:

```
ARRAY /dev/md1 metadata=0.90 UUID=7cc47bea:832f8260:208cdb8d:9e23b04b
ARRAY /dev/md2 metadata=0.90 UUID=cce81d3a:78965aa5:208cdb8d:9e23b04b
ARRAY /dev/md3 metadata=0.90 UUID=f0bc71fc:8467ef54:208cdb8d:9e23b04b
ARRAY /dev/md4 metadata=0.90 UUID=3f4daae2:cbf37a2a:208cdb8d:9e23b04b
```

also i wrote in mdadm.conf that string, just to be sure, hostname do not affect raid naming:

```
HOMEHOST <ignore>
```

then i made mdadm\_stop\_127.scr script:

```
#!/bin/sh
echo "stopping md127"
mdadm --stop /dev/md127

echo "stopping md126"
mdadm --stop /dev/md126

echo "stopping md125"
mdadm --stop /dev/md125

echo "stopping md124"
mdadm --stop /dev/md124

##mdadm --assemble --scan
#-As
```

I copy it to livesystem root, copy also my edited mdadm.conf from /mnt/hd/etc/mdadm.conf to livesystem /etc, and umount /dev/md125 !

And then i run it - my mdadm\_stop\_127.scr

I see, all that arrays be stopped, and then i run:

```
mdadm -As
```

then i see

```
cat /proc/mdstat
```

I see, all my RAID become as it must be - /dev/md1, md2, md3, and md4!

then i do mount my root hdd again:

```
mount /dev/md1 /mnt/hd
```

and do:

```
chroot /mnt/hd /sbin/lilo -v 3
```

all looks good. i do restart:

```
shutdown -r now
```

( or press ctrl +alt+ del)

after restart i see, system start loading, and went after previously dead point. i get to login screen, log in as root, and see, there is md1 ( root) and md2 ( swap), but no md3 and md4 ( instead of it i have these /home and /Second arrays as md125 and md124).

Thats look very strange and unlogical, as all raid arrays var create about same time, and was similar - but half of it get right numbers, and half - not. now i try different thing - disable raid autodetect on kernel, before root fs is mounted, and mdadm.conf is available for md module:

i restart machine, press tab on LiLo prompt, and use kernel parameters:

```
Linux raid=noautodetect md=1,/dev/sda1,/dev/sdb1
```

that says kernel not to autodetect raid arrays, but assemble md1 raid ( md=1) from /dev/sda1 and /dev/sdb1 partition, because without root kernel system cant start.

as i load system in that way, all looks right - there was /dev/md1, md2, md3 and md4.

then i just do system restart, without any kernel parameters, and all again going to be right - md1 till md4.

looks like, system writes something in RAID arrays superblock, or metadata, or something like that, about previously gived md name, because, if not, after restart i must get again situation as previously - with md1, md2, md125 and ,d124...

that was, in a most, all of story. yet, there is some another workarounds of that situation.

## Workarounds for incorrect raid devices naming

1. Using UUID in lilo ( i do not check this), and in fstab for mounting partitions.

do a

```
ls /dev/disk/by-uuid/
```

or better, go in that location with midnight commander, and youl see, there is a "files" named as

numbers - that was the raid array disk uuid - and symlink to /dev/mdx.

for automate info feed into fstab you can use this way:

```
cd /dev/disk/by-uuid

ls -d -l $PWD/* >> /etc/fstab
```

after that you must immediately edit /etc/fstab and make in a right way, otherwise you may have problems with mounting in next boot...

```
/dev/md2          swap          swap          defaults      0 0
/dev/md1          /             ext4          defaults      1 1
##/dev/md3        /home         ext4          defaults      1 2
/dev/disk/by-uuid/ef92814a-2db1-4d47-8d70-4c5a8d56e287 /home
ext4             defaults      1 2
/dev/md4          /Second      ext4          defaults      1 2
#/dev/cdrom       /mnt/cdrom   auto          noauto,owner,ro,comment=x-
gvfs-show 0      0
/dev/fd0          /mnt/floppy  auto          noauto,owner  0 0
devpts           /dev/pts     devpts        gid=5,mode=620 0 0
proc             /proc        proc          defaults      0 0
tmpfs            /dev/shm     tmpfs         defaults      0 0
```

take a note! disk UUID by

/dev/disk/by-uuid/

and that one, who you get via



```
mdadm -D
mdadm -Db
mdadm -Es
```

differ, not the same!!! in fstab ( lilo too?) you must use UID from /dev/disk/by-uuid/ !

### 1. 2. Using initramd.

```
#
# mkinitrd_command_generator.sh revision 1.45
#
# This script will now make a recommendation about the command to use
# in case you require an initrd image to boot a kernel that does not
# have support for your storage or root filesystem built in
# (such as the Slackware 'generic' kernels').
# A suitable 'mkinitrd' command will be:

#/usr/share/mkinitrd/
```

```
mkinitrd -c -k 3.2.29 -f ext4 -r /dev/md1 -m mbcache:jbd2:ext4 -R -u -o  
/boot/initrd.gz
```

rightly edited mdadm.conf then must be copied in /boot/tree??? before you run this mkinitrd conf.

after you run that mkinitrd, you must update lilo.

## Useful commands in this case

show raid array info:

```
mdadm -Es
```

Assemble RAID array based on mdadm.conf

```
mdadm -As
```

show array info:

```
mdadm -D /dev/md127
```

show defined array another info:

```
mdadm -Db /dev/md127
```

show scsi devices info:

```
lsscsi
```

show assembled raid arrays status:

```
cat /proc/mdstat
```

show UUID info about discs ( or RAID arrays) in system:

```
ls /dev/disk/by-uuid/
```

```
dmesg |grep md
```

re-run lilo, when booted from another source.

```
chroot /mnt/hd /sbin/lilo -v 3
```

stop named RAID array:

```
mdadm --stop /dev/md127
```

kernel options:

```
$kernelname raid=noautodetect md=1, /dev/sda1,/dev/sdb1
```

turn on not to autodetect RAID arrays, and define raid array /dev/md1, from two partitions ( members? )

## Useful Links:

- <http://www.linuxquestions.org/questions/slackware-14/repair-lilo-on-software-raid1-4175593663/>
- [https://bugzilla.redhat.com/show\\_bug.cgi?id=606481](https://bugzilla.redhat.com/show_bug.cgi?id=606481)
- <https://www.linux.org.ru/forum/admin/13033496?lastmod=1479927790872> (in russian )
- [https://raid.wiki.kernel.org/index.php/Linux\\_Raid](https://raid.wiki.kernel.org/index.php/Linux_Raid)
- <https://www.kernel.org/doc/Documentation/md.txt>

## Sources

Originally written by — [John Ciemgals](#) 2016/11/28 04:50

Rewritten with used materials from “Links” and LinuxQuestions.org Slackware forum, especially user bassmadrigal and bormant from linux.org.ru help — [John Ciemgals](#) 2016/11/28 09:15

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