- Create array

This guide will outline the basics of software-based RAID using mdadm in Linux.
Mdadm is particularly useful if you need some resiliency against data loss due to disk failure and don't mind taking the performance hit on system resources that goes along with software RAID.
Please note: Software RAID is by no means perfect and is not a substitute to a hardware-based RAID solution. I will not accept any responsibility if you follow this guide and you lose your data!
Here is a quick breakdown of what is needed to create a software RAID array using mdadm:

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- Verify array
- Create mdadm configuration file (to ensure that RAID array gets created every time the system is booted)
  - Make mount point
  - Add mount entry to fstab

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# **Create array**

#### Syntax:

```
mdadm --create --chunk=X --level=Y --raid-devices=Z
```

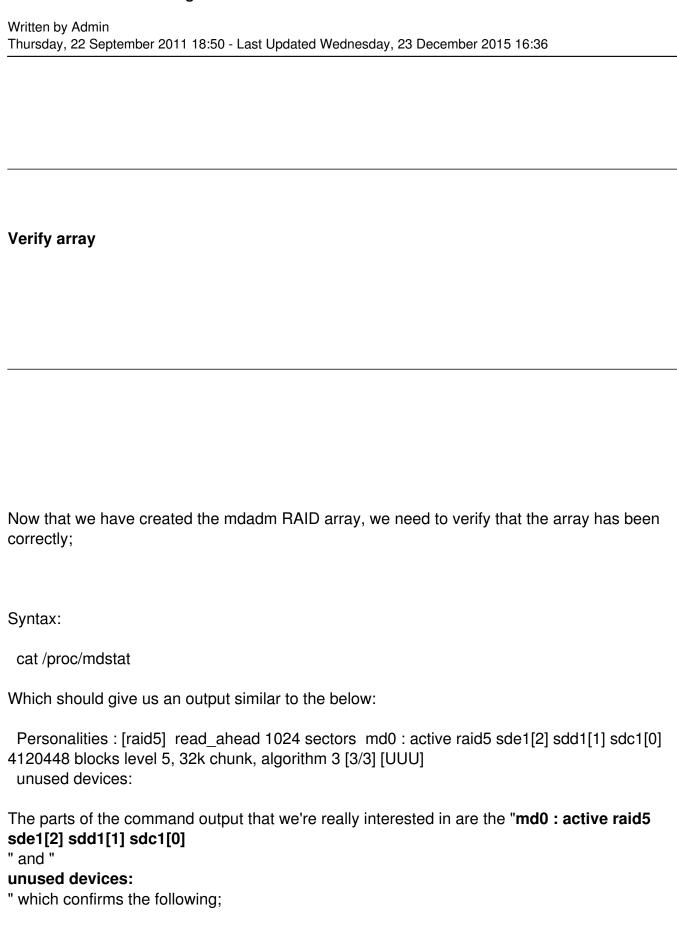
If we were going to create a RAID 5 array with 3 devices (/dev/sdc1/ dev/sdd1 & /dev/sde1), a block size of 32Kb and virtual device name of /dev/md0 the command would be:

mdadm --create /dev/md0 --chunk=32k --level=5 --raid-devices=3 /dev/sdc1 /dev/sdd1 /dev/sde1

mdadm supports the following RAID levels:

- RAID 0 Block level stripe
- RAID 1 Mirror
- RAID 4 RAID 0 with an additional device for parity
- RAID 5 RAID 4 with parity distributed between all disks in the array
- RAID 6 RAID 5 with 2 parity segments per stripe
- RAID 10 RAID 1 mirrorsets striped like RAID 0

As a side note, the chunk size is an optional parameter. If this option is not specified, mdadm will default to 64k block size.



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- There are	no mdadm unused devices.
All of the above Array" section o	is our desired configuration, based upon the configuration we set in the "Create of this guide.
Create mdadm	configuration file

Now that we have got a RAID array configured within mdadm, we need to ensure that our RAID array gets correctly created (pieced back together) after a reboot.



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Assuming that we want to have our RAID array mounted into /mnt/RAID, all we would do is:
mkdir /mnt/RAID
It doesn't get easier than this, does it?
Add mount entry to fstab
This is the final part to our guide (well 2 parts) to our guide. I'll this section into two distinct operations; Formatting our new RAID array & adding the fstab entry.
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Formatting the RAID array

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I'm going to be using gParted for the purpose of this guide as it's a nice and easy gui partition editor.

- Open up gParted (0.8.1)
- From the drop-down list on the right-hand side of the window, select our /dev/md0 device
- Click on 'new' on the left hand side of the window, to bring up the partition create dialogue
- From the "File system" dropdown box, select "ext3" or "ext4"
- Accept all other remaining defaults and click on "Add"

## Add mount entry to fstab

Next we need to create the fstab entry to make the system always mount the device on boot. Take a backup of the existing fstab:

cp -p /etc/fstab /etc/fstab bak

Open the fstab in your favorite editor and add the following line to the end of it:

/dev/md0 /mnt/RAID ext3 defaults 0 0

This is basically telling our system

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- Where the source device is (/dev/md0)
- The folder that we wish to mount it in (/mnt/RAID)
- The file system type (ext3 or ext4 based upon your choices when formatting)
- The mount options (in this case 'defaults')
- The dump option (0 means ignore)
- The fsck order (0 means "do not check", you can (should) enter a value in here to tell the o/s what fsck priority you wish to designate for this mountpoint (typically 2).

Save these changes and reboot the system; you're done!