

Linux Software RAID Installation

A tcd IT Solutions Linux support initiative

Scope of this Document

We are going to discuss the installation of Software RAID on a Linux system.

This discussion is based on the RAID system being installed from the initial first fresh installation.

This document has come about from days of research trying to find understandable answers to setting up software RAID.

Bases of this document

To go over RAID1 and RAID5 on a fresh Linux installation.

As per this document RAID1 is a mirrored set. E.G

Disk A Partition A = Disk B Partition A.

As per this document RAID5 is a striped set consisting of minimum of 3 disks.

It is better with an additional disk where you can put the boot partition and even the swap space on.

This helps as it keeps the system bootable and if this drive fails the data on the RAID5 system is still intact.

This is what the RAID partition will consist of

Disk A Partition A + Disk B Partition A + Disk C Partition A

This will form one partition in a striped format to provide redundancy, remembering you only get 2/3 of your disk space as the other 1/3 is used for parity checking

Never before do I think someone has sat down and said to themselves that they are going to purchase a large amount of disks of different sizes and implement a RAID system that does not work.

If or when one implements a RAID1 or RAID5 system you would like to know that the redundancy you have built in actually works. For either of these RAID variations we need to have equal partition sizes. Any RAID system will take the lowest sizes as the given RAID configuration partition size.

Over many long hours of research, trial error, a lot of testing and eventually success it has lead to this document in the hope to make someone else's life easier in implementing their RAID system.

From a fresh installation of Linux you reach a point where the disks must be partitioned. At this point you are required to select partitions were the Linux operating system is going to install its files.

*As per many Linux installation the **"/boot"** is required to run on a RAID0 or RAID1 partition.*

*The **"/"** or normally known as the root can run on any form of RAID partitioning and In all this we need to create a swap partition.*

The above is the minimum requirement to get a Linux box up and running on a RAID system.

This is where this document starts.

As we are going to run a RAID5 system we must have 3 disks preferably of equal size. By adding an additional disk for the /boot and SWAP space will make the system more redundant.

- 1. We are going to setup a RAID1 mirrored disk set where we are going to install the **"/boot"** mount point. The **"/boot"** does not require much disk space BUT for ease of use we are going to make it the same size as your amount of RAM therefore we will work with a RAM figure of 4Gig.*

2. Create a RAID partition of 4Gig on two of the disks E.G SDA = 4Gig SDB = 4Gig
3. SDC will also get a 4Gig partition but for the SWAP volume
4. We are going to make a RAID1 MD0 partition from SDA + SDB and this is going to be your "/boot" mount point
5. We will now create from the remainder of the disk capacity a RAID partition on each of these disks "all of equal size".
6. We will then select all of the drives partitions SDA2 + SDB2 + SDC2 to create a RAID5 disk array
7. This will be our RAID5 md1 partition.
8. From this point you can decide if you want to create a LVM for feature capacity increase on the RAID system "Just a bit of future planning"
9. Now you are ready to install your Linux system.
10. Once all this is installed and the system is rebooted install Webmin from www.webmin.com it is the easiest web development package to monitor the RAID system unless you are hard core and can check it via the command line "not for this document"
11. Now that all is installed and you have checked that all is synchronized pull one of the disks and make sure that the system is working before you load all your data on it and later find that there is something wrong.
12. REMEMBER that a RAID system is not an excuse to not have decent backups, this must still be done.
13. RAID is a redundant system to give users more up time and to make a techies life easier by not having to recreate and restore a complete system

*On a system installed in this design we hope not to loose more than one disk and of course on the mirror set for the "**boot**" system additional configurations will be required to make sure that the system boots from the mirror RAID1 second partition. In standard mirror set installations the seconded mirror drive does not have the capacity to boot.*

Tried tested and we know it works. Although we have tested it on Fedora Core I do not see any reason why it should not work on other Linux versions/Ports

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