Random Ramblings

Random Ramblings of a Network Security Engineer

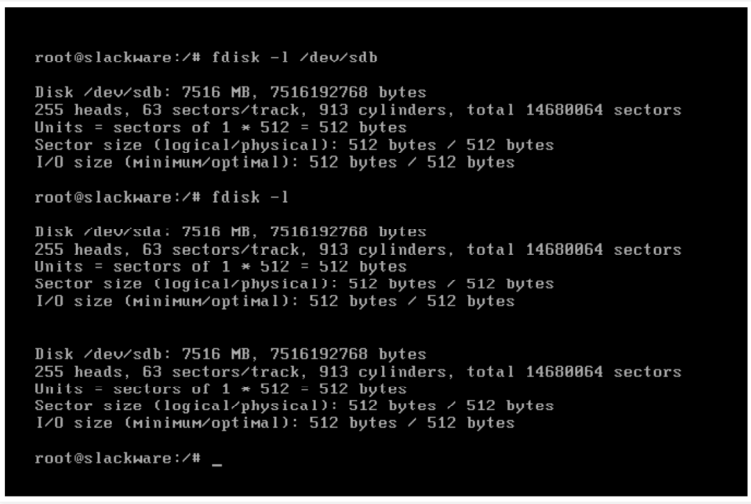
Saturday, July 6, 2013

Installing Slackware 14 on a Linux Software RAID 1 (MIRRORING)

This is beginners guide on how to install Slackware Linux 14 on a RAID 1 (mirrored) drive.

Boot the system with Slackware 14 ISO and then when prompted, choose the appropriate keyboard type. To login type root and press enter. The details related to the disks that are present in the machine can printed using the following command:

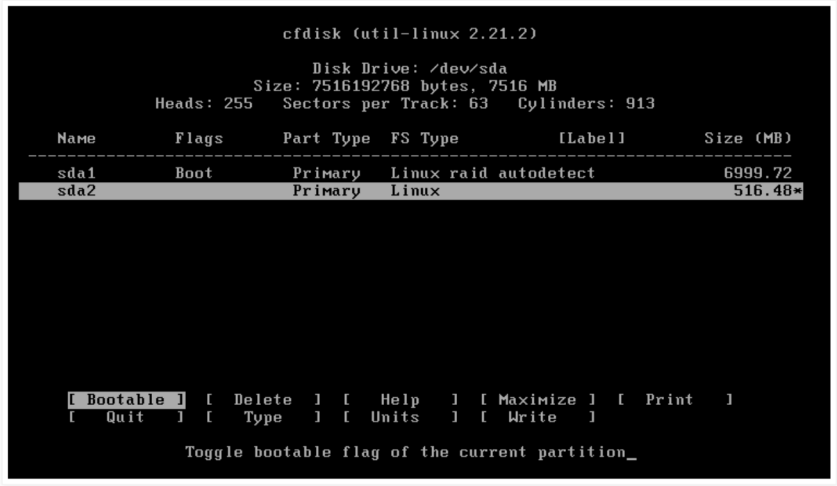
```
# fdisk -l
```



In my system there are two identical SCSI disk, each of size 7516 MB. Two identical disks are needed for RAID 1 (mirroring) or else the size of the smallest disk will become the size of the final RAID array. The plan is to create two Linux software RAID 1 arrays. The first one will be used as the / (root) partition and the next one will be used as swap partition. The root partition on the first raid array will have the size of 7000 MB and the next RAID array which will be used as swap will be allocated the remaining Space. To achieve this we partition the first drive /dev/sda using the cfdisk utility. The steps are as follows :

[1] Type cfdisk /dev/sda and press enter
[2] Chose the Pri/Log Fress Space and chose [New] and press enter
[3] Chose [Primary] and press enter
[4] Enter the Size as 7000 MB (or whatever you think is suitable in your layout)
[5] Chose Beginning and Press enter
[6] Chose [Bootable] and press enter
[7] Select [Type] while the new partition is highlighted and then press enter
Enter the filesystem Type as FD (Linux Raid AutoDetect) and press Enter

Now you will have something like this:



[8] Now use the down arrow key to select the Free Space and make sure that [New] is highlighted and then press enter

About Me

Prithak

I am a IT Security Specialist interested in network Security and Pentesting. If you have some IT Security related work you can contact me at prithak AT gmail DOT com.

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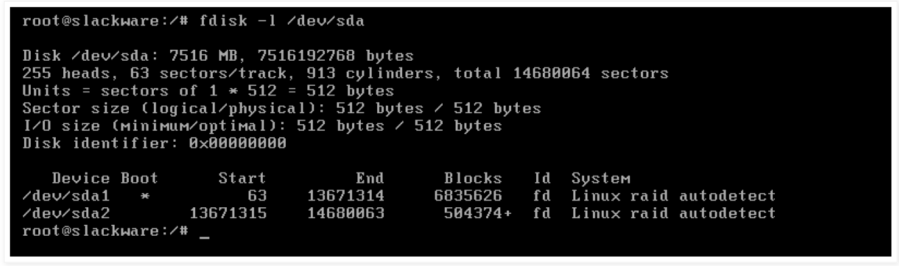
[9] Select [Primary] and press enter
[10] Accept the default size (in my case 516.48 MB) by pressing Enter
[11] As before , change the type of this partition into FD (Linux Raid AutoDetect) {Similar to step 7 above }
[12] Finally write the partition table onto the disk by selecting [Write] and by pressing enter
[13] Type 'yes' and the press enter
[14] Select [Quit] and press Enter to quit the cfdisk utility

We can verify that the partition table of /dev/sda is written correctly by using the fdisk –l command.



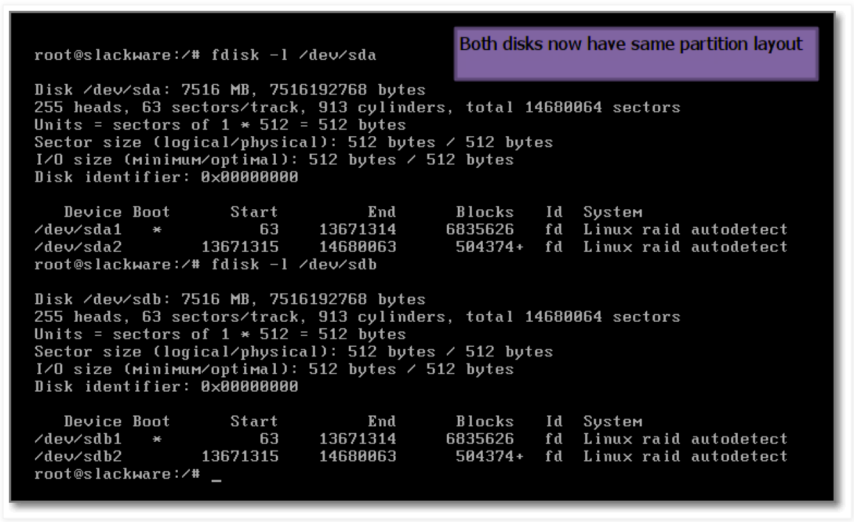
The next step is to copy the partition table of /dev/sda into /dev/sdb by using the sfdisk utility. This can be done using the following command :

```
# sfdisk -d /dev/sda | sfdisk --force /dev/sdb
```

Now both the disk sda and sdb have identical partition table, which can be verified by using the following commands :

fdisk –l /dev/sda

fdisk –l /dev/sdb



The cat /proc/mdstat command will show us that there are currently no RAID arrays present in the system :

The next step is to create the raid arrays using the mdadm utility. To create the first RAID array that will be used as / (root) partition we can use the following command :

```
# mdadm --create  /dev/md0 --level=1 –raid-devices=2 /dev/sda1 /dev/sdb1
--metadata=0.90
```

We can view the status of the newly created RAID device using the **cat /proc/mdstat** command:

```
root@slackware:/# mdadm --create /dev/md0 --level=1 --raid-devices=2 /dev/sda1 /
dev/sdb1 --metadata=0.90
mdadm: array /dev/md0 started.
root@slackware:/# cat /proc/mdstat
Personalities : [linear] [raid0] [raid1] [raid10] [raid6] [raid5] [raid4] [multi
path]
md0 : active raid1 sdb1[1] sda1[0]
      6835520 blocks [2/2] [UU]
      [=====>.............]  resync = 29.2% (2000000/6835520) finish=0.4min sp
eed=200000K/sec

unused devices: <none>
root@slackware:/# cat /proc/mdstat
Personalities : [linear] [raid0] [raid1] [raid10] [raid6] [raid5] [raid4] [multi
path]
md0 : active raid1 sdb1[1] sda1[0]
      6835520 blocks [2/2] [UU]

unused devices: <none>
root@slackware:/# _
```

Similarly, we can create the RAID device /dev/md1 which will be used as our swap partition using the following command:

```
# mdadm --create  /dev/md1 --level=1 –raid-devices=2 /dev/sda2 /dev/sdb2
--metadata=0.90
```

```
root@slackware:/# mdadm --create /dev/md1 --level=1 --raid-devices=2 /dev/sda2 /
dev/sdb2 --metadata=0.90
mdadm: array /dev/md1 started.
root@slackware:/# cat /proc/mdstat
Personalities : [linear] [raid0] [raid1] [raid10] [raid6] [raid5] [raid4] [multi
path]
md1 : active raid1 sdb2[1] sda2[0]
      504256 blocks [2/2] [UU]
      [=======>.............]  resync = 38.1% (192512/504256) finish=0.0min spee
d=96256K/sec

md0 : active raid1 sdb1[1] sda1[0]
      6835520 blocks [2/2] [UU]

unused devices: <none>
```

As we can see from the above output /dev/md0 is fine and /dev/md1 is being synced. Now our raid arrays are in place. Before we being the installation of the Slackware using the setup command, we will format /dev/md1 as the swap partition.

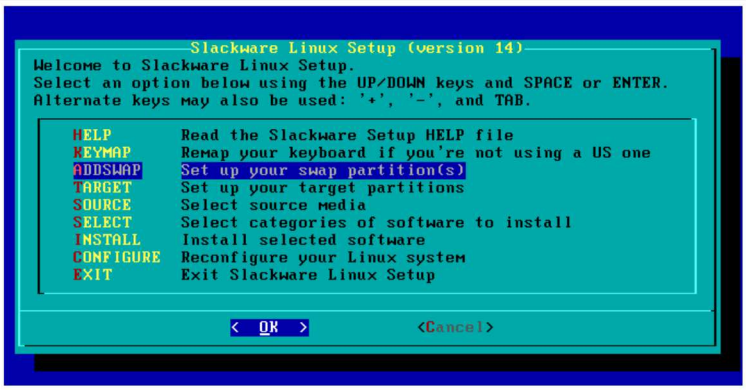
```
# mkswap /dev/md1
```

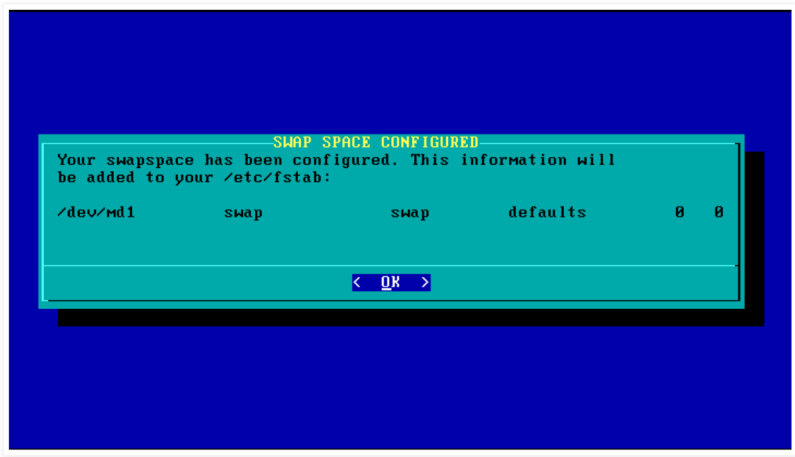
Now we can begin the installation of the Slackware Linux using the setup command:

```
# setup
```

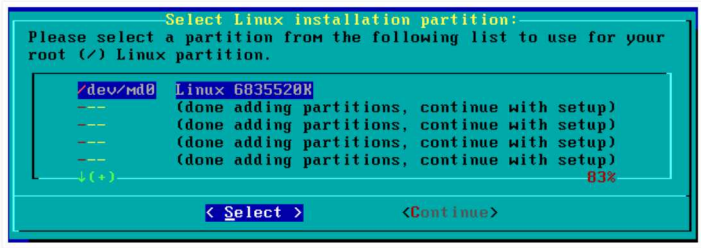
The steps are as follows :

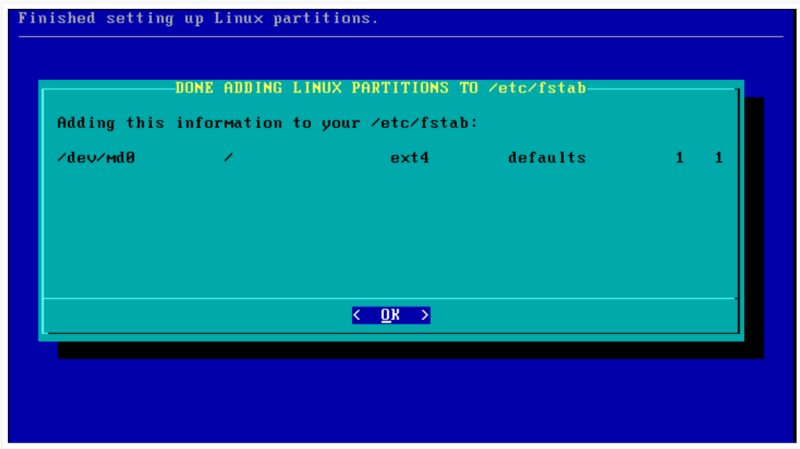
[1] Choose the ADDSWAP option and press Enter. The /dev/md1 partition will be detected as swap. When prompted for "Check SWAP Partitions for BAD Blocks" , chose NO. Then the swap space will be added into the /etc/fstab file.





[2] In the next step we will chose /dev/md0 as the / (root) partition. We will choose to Format it and the EXT4 file system is chosen. After the formatting is complete the /etc/fstab file will be updated.





[3] Choose install Slackware from CD or DVD
[4] Choose the packages and then begin the installation

[5] Supply root password and complete the Setup by installing Lilo bootloader.

After the installation is finished we drop to the install shell and then chroot to the newly installed Linux partition by using the following command:

```
# chroot /mnt/ /bin/bash
```

We then backup the original lilo.conf file and replace it with the following :

```
# mv /etc/lilo.conf   /etc/lilo.conf.ori
# vi /etc/lilo.conf
```

```
append=" vt.default_utf8=0"
boot = /dev/md0
raid-extra-boot="/dev/sda,/dev/sdb"
bitmap = /boot/slack.bmp
bmp-colors = 255,0,255,0,255,0
bmp-table = 60,6,1,16
bmp-timer = 65,27,0,255
prompt
timeout = 1200
change-rules
reset
vga = normal
image = /boot/vmlinuz
  root = /dev/md0
  label = Linux
  read-only
```

Finally we , reinstall Lilo using the following command :

```
# lilo -v
```

Now, the installation is complete , we can reboot the system using the following command :

```
# reboot
```

After we have booted into the freshly installed Slackware, we can check the status of the raid array using the following commands:

```
root@slack-box:~#  mdadm --detail /dev/md0
```

```
root@slack-box:~#  mdadm --detail /dev/md0
/dev/md0:
        Version : 0.90
  Creation Time : Fri Jul  5 21:02:13 2013
     Raid Level : raid1
     Array Size : 6835520 (6.52 GiB 7.00 GB)
  Used Dev Size : 6835520 (6.52 GiB 7.00 GB)
   Raid Devices : 2
  Total Devices : 2
Preferred Minor : 0
    Persistence : Superblock is persistent

    Update Time : Sat Jul  6 21:51:30 2013
          State : clean
 Active Devices : 2
Working Devices : 2
 Failed Devices : 0
  Spare Devices : 0

           UUID : d8afa21c:1cbcd607:208cdb8d:9e23b04b
         Events : 0.20

    Number   Major   Minor   RaidDevice State
       0       8        1        0      active sync   /dev/sda1
       1       8       17        1      active sync   /dev/sdb1
```

```
root@slack-box:~#  mdadm --detail /dev/md1
```

```
root@slack-box:~# mdadm --detail /dev/md1
/dev/md1:
        Version : 0.90
  Creation Time : Fri Jul  5 21:02:27 2013
     Raid Level : raid1
     Array Size : 504256 (492.52 MiB 516.36 MB)
  Used Dev Size : 504256 (492.52 MiB 516.36 MB)
   Raid Devices : 2
  Total Devices : 2
Preferred Minor : 1
    Persistence : Superblock is persistent

    Update Time : Sat Jul  6 21:53:27 2013
          State : clean
 Active Devices : 2
Working Devices : 2
 Failed Devices : 0
  Spare Devices : 0

           UUID : a0dab266:3372cc28:208cdb8d:9e23b04b
         Events : 0.20

    Number   Major   Minor   RaidDevice State
       0       8        2        0      active sync   /dev/sda2
       1       8       18        1      active sync   /dev/sdb2
root@slack-box:~#
```

It is a good idea to generate the mdadm.conf file. We can do this by using the following command :

```
root@slack-box:~#  mdadm --detail --scan > /etc/mdadm.conf
```

```
root@slack-box:~# mdadm --detail --scan
ARRAY /dev/md/0_0 metadata=0.90 UUID=d8afa21c:1cbcd607:208cdb8d:9e23b04b
ARRAY /dev/md/1_0 metadata=0.90 UUID=a0dab266:3372cc28:208cdb8d:9e23b04b
root@slack-box:~# mdadm --detail --scan > /etc/mdadm.conf
root@slack-box:~# cat /etc/mdadm.conf
ARRAY /dev/md/0_0 metadata=0.90 UUID=d8afa21c:1cbcd607:208cdb8d:9e23b04b
ARRAY /dev/md/1_0 metadata=0.90 UUID=a0dab266:3372cc28:208cdb8d:9e23b04b
root@slack-box:~#
```

Posted by Prithak at 3:59 PM

Reactions: funny (0) interesting (0) cool (0)

2 comments:

Sasa Ostrouska October 26, 2013 at 7:32 PM

Many thanks for this nice guide.

Reply

Retrovit ID May 9, 2014 at 12:40 AM

Thanks for review, it was excellent and very informative.
thank you :)

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