Blastoff Tutorial for LVM

"Blastoff" is a tool that allows you to install Debian on any Linux system without having removable media, and without losing existing files. The process is low-risk and takes 30-45 minutes. This tutorial is applicable to system using LVM partitions. (In the past, the advice for dealing with these partitions was "seek professional care". Sadly, all of the systems encountered during regionals require this procedure, meaning other people must understand it.)

1. Ensure the machine uses LVM before following this procedure. You can check this by entering `lsblk`. For instance, this system uses an LVM. If the system does NOT use an LVM, you can follow the original blastoff tutorial.

```
[ian@centos-test ~]$ lsblk
NAME              MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
sda                   8:0   0   16G  0 disk
├─sda1                8:1   0    1G  0 part /boot
└─sda2                8:2   0   15G  0 part
  ├─centos-root     253:0   0 13.4G  0 lvm  /
  └─centos-swap     253:1   0  1.6G  0 lvm  [SWAP]
sr0                  11:0   1 55.3M  0 rom  /run/media/ian/VBox_GAs_5.2.22
```

2. Load the Blastoff script in the root directory. This may be done by accessing the script from iwalton.com (not ideal) or using DNS. Pastebin may also be an option.

```
dig +short c.datadefendr.com TXT|tr -d '"'|sort -r|base64 -d|gunzip>gd
bash gd blastoff | bash
```

3. Reboot the computer. (Enter the `reboot` command.)

4. From Grub, enter the editor mode. The steps to do this vary based on what Grub version you are running. For instance, on this system press 'e' to edit the boot cmdline:

```
Use the ↑ and ↓ keys to change the selection.
Press 'e' to edit the selected item, or 'c' for a command prompt.
```

5. Change the boot options to point to the Debian installer, which is located in `/dlinux` and `/dinitrd.img`.

Before:

```
        linux16 /vmlinuz-3.10.0-693.el7.x86_64 root=/dev/mapper/centos-root ro\
rd.lvm.lv=centos/root rd.lvm.lv=centos/swap rhgb quiet LANG=en_US.UTF-8
        initrd16 /initramfs-3.10.0-693.el7.x86_64.img
```

After:

```
        linux16 /dlinux root=/dev/mapper/centos-root ro rd.lvm.lv=centos/root \
rd.lvm.lv=centos/swap rhgb quiet LANG=en_US.UTF-8
        initrd16 /dinitrd.img
```

6. Press the key indicated to start the boot process. On this system, it is CTRL+X.

7. You should now see the Debian installer. Proceed as usual until you get to the partitioning step.

8. Select "Manual".

9. Select "Go Back" when you get to the "Partition disks" step.

10. Select "Execute a shell".

```
 Change debconf priority
 Save debug logs
 Execute a shell
```

11. Determine the volumes you need to mount.

```
blkid /dev/sda*
ls /dev/mapper/
```

```
~ # blkid /dev/sda*
/dev/sda: PTUUID="000b3a74" PTTYPE="dos"
/dev/sda1: UUID="ad4b0132-d00d-4b2b-a622-6c6b117fe71d" TYPE="xfs" PARTUUID="000b
3a74-01"
/dev/sda2: UUID="RH6kVP-hEK0-u3D2-ViTP-6yDa-cfKE-GxKRst" TYPE="LVM2_member" PART
UUID="000b3a74-02"
~ # ls /dev/mapper/
centos-root  centos-swap  control
~ # 
```

12. In this case, the root partition is the lvm partition located at /dev/mapper/centos-root. The boot partition (the one that isn't swap or lvm2_member on /dev/sda) is on /dev/sda1. Mount the partitions.

```
mount /dev/mapper/centos-root /mnt
mount /dev/sda1 /mnt/boot
cd /mnt
```

13. The debian installation will fail if there isn't more than about 50 MiB in the boot partition. Determine the amount of free disk space using this command:

```
df -h /boot
```

14. If there isn't enough space on the boot partition, create a backup folder on the root partition and move old linux images and initrd filesystems to the backup folder. **Moving grub components or the blastoff files will render the system unbootable.**
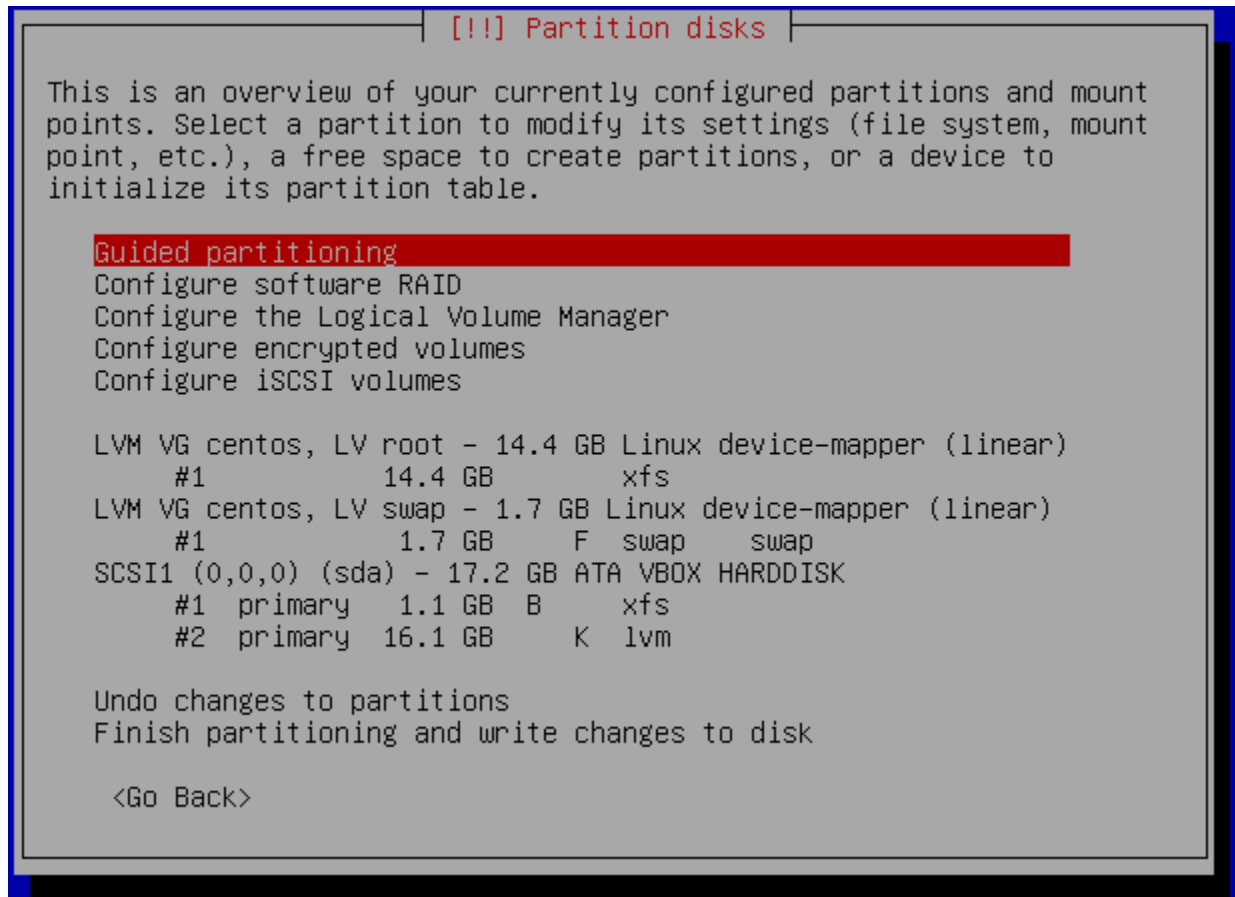
15. Run the replace.sh script provided with blastoff to clean the root directory structure. You will see errors. Ignore them, as additional steps are needed to unmount the LVM.
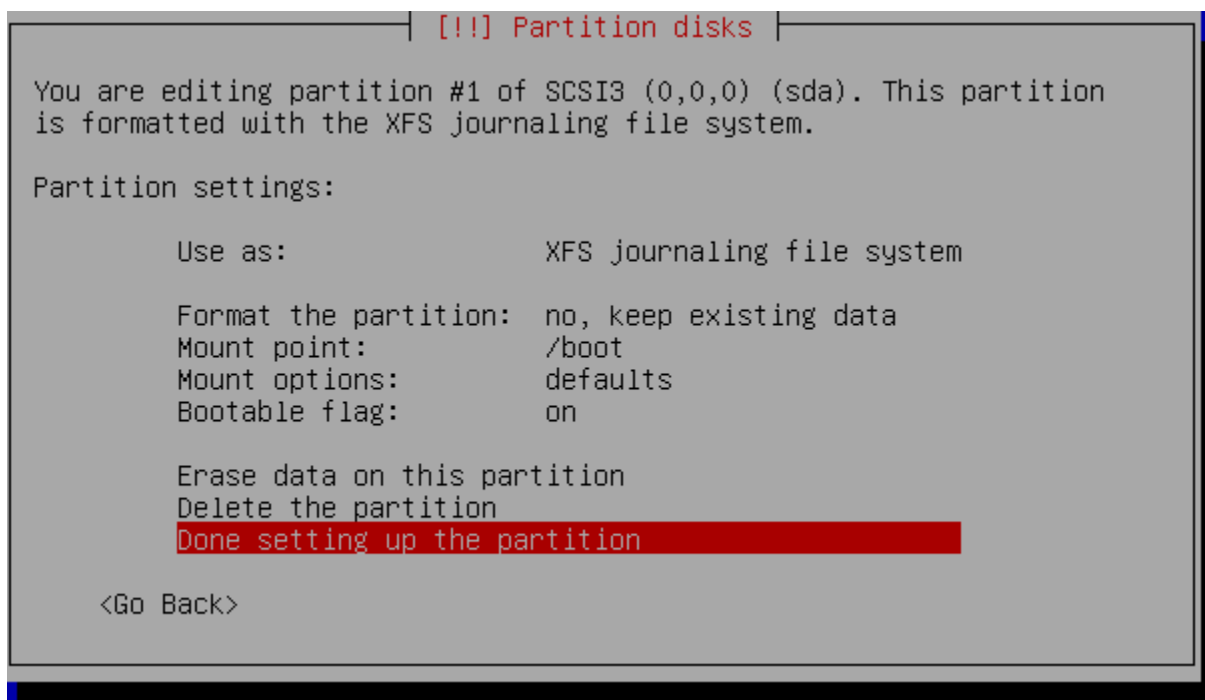
    ```
    ./replace.sh
    ```
16. Unmount the mountpoints:

    ```
    cd /
    umount /mnt/boot
    umount /mnt
    ```
17. Press CTRL+D to exit the shell. Select the "Partition disks" option. The partition disks menu should display:

```
┤ [!!] Partition disks ├

This is an overview of your currently configured partitions and mount
points. Select a partition to modify its settings (file system, mount
point, etc.), a free space to create partitions, or a device to
initialize its partition table.

    Guided partitioning
    Configure software RAID
    Configure the Logical Volume Manager
    Configure encrypted volumes
    Configure iSCSI volumes

    LVM VG centos, LV root - 14.4 GB Linux device-mapper (linear)
        #1              14.4 GB          xfs
    LVM VG centos, LV swap - 1.7 GB Linux device-mapper (linear)
        #1              1.7 GB      F  swap      swap
    SCSI1 (0,0,0) (sda) - 17.2 GB ATA VBOX HARDDISK
        #1   primary   1.1 GB  B     xfs
        #2   primary  16.1 GB        K  lvm

    Undo changes to partitions
    Finish partitioning and write changes to disk

     <Go Back>
```

18. Configure the boot partition. In this case, it is an XFS partition. Use whatever partition type is currently configured, and set the mountpoint to /boot. **Ensure the partition is not going to be formatted.** Select "Done setting up the partition".

```
                      ┤ [!!] Partition disks ├
 You are editing partition #1 of SCSI3 (0,0,0) (sda). This partition
 is formatted with the XFS journaling file system.

 Partition settings:

         Use as:                XFS journaling file system

         Format the partition:  no, keep existing data
         Mount point:           /boot
         Mount options:         defaults
         Bootable flag:         on

         Erase data on this partition
         Delete the partition
         Done setting up the partition

     <Go Back>
```
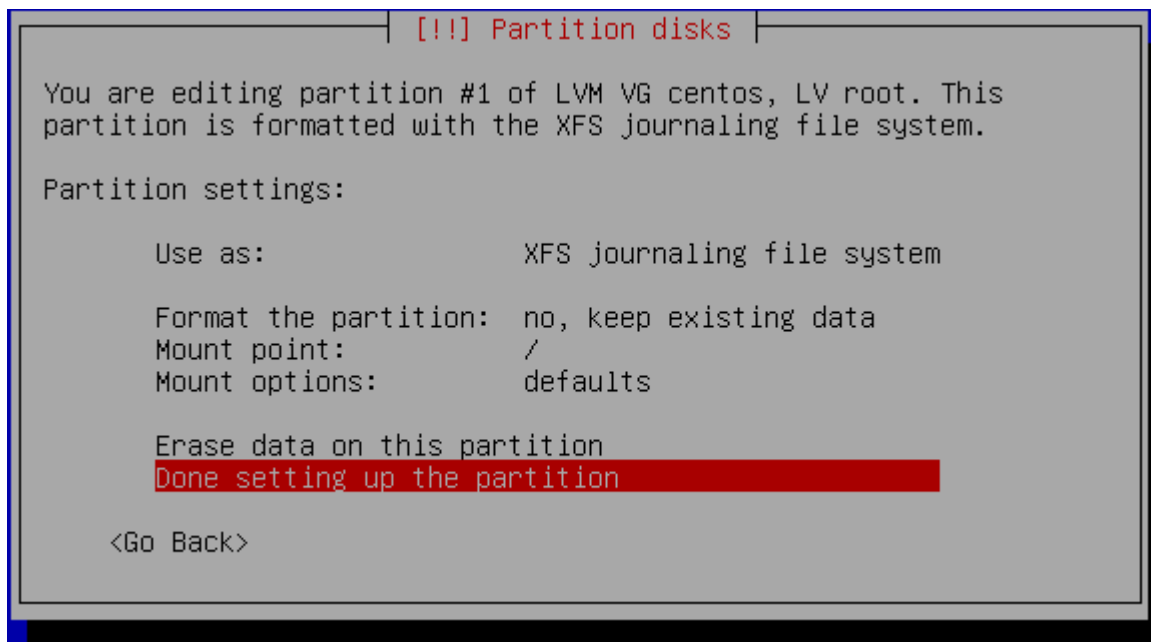
19. Configure the swap partition. In this case, the swap partition is in the LVM and is called swap.

```
                      ┤ [!!] Partition disks ├
 You are editing partition #1 of LVM VG centos, LV swap. No existing
 file system was detected in this partition.

 Partition settings:

               Use as:  swap area

               Erase data on this partition
               Done setting up the partition

     <Go Back>
```
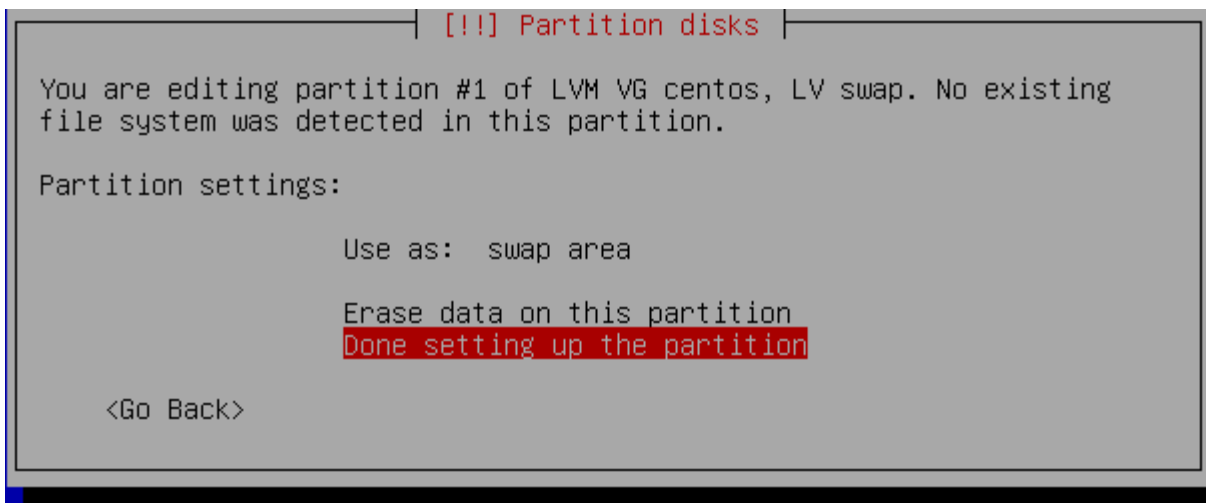
20. Configure the root partition. In this case, the swap partition is in the LVM and is called root. In this case, it is an XFS partition. Use whatever partition type is currently configured, and set the mountpoint to /. **Ensure the partition is not going to be formatted.** Select "Done setting up the partition".

```
┤ [!!] Partition disks ├

 You are editing partition #1 of LVM VG centos, LV root. This
 partition is formatted with the XFS journaling file system.

 Partition settings:

        Use as:                 XFS journaling file system

        Format the partition:  no, keep existing data
        Mount point:             /
        Mount options:           defaults

        Erase data on this partition
        Done setting up the partition

    <Go Back>
```

21. Confirm the partition settings are desired, and then select "Finish partitioning and write changes to disk".

22. Continue through the installation as normal. Do not install a graphical environment now, as it decreases odds of success and increases downtime. The installation may be reverted up to the point of installing grub.