

Ubuntu

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Repairing the GRUB bootloader

When you install Windows, Windows assumes it is the only operating system (OS) on the machine, or at least it does not account for Linux. So it replaces GRUB with its own boot loader. What you have to do is replace the Windows boot loader with GRUB. I've seen various instructions for replacing GRUB by mucking around with GRUB commands or some such, but to me the easiest way is to simply chroot into your install and run `update-grub`. chroot is great because it allows you to work on your actual install, instead of trying to redirect things here and there. It is really clean.

Boot from the live CD or live USB, in "Try Ubuntu" mode.

Determine the partition number of your main partition. `sudo fdisk -l`, `sudo blkid` or GParted (which should already be installed, by default, on the live session) can help you here. I'm going to assume in this answer that it's `/dev/sda2`, but make sure you use the correct partition number for your system!

If your main partition is in an LVM, the device will instead be located in `/dev/mapper/`, most likely, `/dev/mapper/{volume}--{os}-root` where `{volume}` is the LVM volume name and `{os}` is the operating system. Execute `ls /dev/mapper` for the exact name.

Mount your partition:

```
sudo mount /dev/sda2 /mnt #Replace sda2 with the partition from step 2
```

If you have a separate `/boot`, `/var` or `/usr` partitions, repeat steps 2 and 3 to mount these partitions to `/mnt/boot`, `/mnt/var` and `/mnt/usr` respectively. For example,

```
sudo mount /dev/sdXW /mnt/boot
sudo mount /dev/sdXY /mnt/var
sudo mount /dev/sdXZ /mnt/usr
```

replacing `sdXW`, `sdXY`, and `sdXZ` with the respective partition numbers.

Bind mount some other necessary stuff:

```
for i in /sys /proc /run /dev; do sudo mount --bind "$i" "/mnt$i"; done
```

If Ubuntu is installed in EFI mode (see this answer if you're unsure), use `sudo fdisk -l | grep -i efi` or GParted to find your EFI partition. It will have a label of EFI. Mount this partition, replacing `sdXY` with the actual partition number for your system:

```
sudo mount /dev/sdXY /mnt/boot/efi
```

chroot into your Ubuntu install:

```
sudo chroot /mnt
```

At this point, you're in your install, not the live session, and running as root. Update grub:

```
update-grub
```

If you get errors or if going up to step 7 didn't fix your problem, go to step 8. (Otherwise, it is optional.)

Depending on your situation, you might have to reinstall grub:

```
grub-install /dev/sda  
update-grub # In order to find and add windows to grub menu.
```

If Ubuntu is installed in EFI mode, and EFI partition UUID has changed, you may need to update it in `/etc/fstab`. Compare it:

```
blkid | grep -i efi  
grep -i efi /etc/fstab
```

If current EFI partition UUID (from `blkid`) differs from the one in `/etc/fstab`, update `/etc/fstab` with current UUID.

If everything worked without errors, then you're all set:

```
exit  
sudo reboot
```

At this point, you should be able to boot normally.

If you cannot boot normally, and didn't do step 8 because there were no error messages, try again with step 8.

Sometimes giving GRUB2 the correct configuration for your partitions is not enough, and you must actually install it (or reinstall it) to the Master Boot Record, which step 8 does. Experience helping users in chat has shown that step 8 is sometimes necessary even when no error messages are shown.

Boot stuck at "A start job is running for Create Volatile Files and Directories"

This message will appear when the /tmp directory is full or has too many files/directories inside it. Since it prevents a successful boot, we will need to modify the boot options to fix it

First, restart the affected system (Ctrl-Alt-Del or power cycle it) and upon reaching Grub, press the E key to begin editing the boot option

Scroll to the bottom and find the section including root=/* and "ro". This is the area we will be editing. Server versions of Ubuntu normally mention "maybe-ubiquity" after this, whereas desktop versions normally include "quiet splash"

GNU GRUB version 2.04

```
insmod part_gpt
insmod ext2
set root='hd0,gpt2'
if [ x$feature_platform_search_hint = xy ]; then
    search --no-floppy --fs-uuid --set=root --hint-bios=hd0,gpt2 -\
-hint-efi=hd0,gpt2 --hint-baremetal=ahci0,gpt2  86e82675-2f38-4dde-ab5f-\
8a3cb6d5e3ae
else
    search --no-floppy --fs-uuid --set=root 86e82675-2f38-4dde-ab5\
f-8a3cb6d5e3ae
fi
linux      /vmlinuz-5.4.0-153-generic root=/dev/mapper/ubuntu-\
-vg-ubuntu--lv ro_ maybe-ubiquity
initrd     /initrd.img-5.4.0-153-generic
```

Minimum Emacs-like screen editing is supported. TAB lists completions. Press Ctrl-x or F10 to boot, Ctrl-c or F2 for a command-line or ESC to discard edits and return to the GRUB menu.

Change the "ro" (read-only) to "rw" (read-write) and add `init=/bin/bash` after it (ensuring there's a double space after rw)

```
GNU GRUB  version 2.04

insmod part_gpt
insmod ext2
set root='hd0,gpt2'
if [ x$feature_platform_search_hint = xy ]; then
    search --no-floppy --fs-uuid --set=root --hint-bios=hd0,gpt2 -\
-hint-efi=hd0,gpt2 --hint-baremetal=ahci0,gpt2  86e82675-2f38-4dde-ab5f-\
8a3cb6d5e3ae
else
    search --no-floppy --fs-uuid --set=root 86e82675-2f38-4dde-ab5\
f-8a3cb6d5e3ae
fi
linux      /vmlinuz-5.4.0-153-generic root=/dev/mapper/ubuntu-\
-vg-ubuntu--lv rw   init=/bin/bash_
initrd     /initrd.img-5.4.0-153-generic

Minimum Emacs-like screen editing is supported. TAB lists
completions. Press Ctrl-x or F10 to boot, Ctrl-c or F2 for a
command-line or ESC to discard edits and return to the GRUB
menu.
```

Now we're effectively running in single-user (root) mode. We can now run the commands needed to reset the `/tmp` directory:

Move the existing directory:

```
mv /tmp /old.tmp
```

Make a new directory:

```
mkdir /tmp
```

Set the correct permissions:

```
chmod 1777 /tmp
```

Now we can reboot. The normal "reboot" command doesn't work in this mode, so a `Ctrl-Alt-Del` is the easiest way!