

# UNIX & LINUX

## Out of memory on "Loading initial ramdisk" after kernel upgrade (4.15 to 4.19) on Ubuntu 18

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I'm trying to upgrade my kernel to 4.19, because I need to run some benchmarks that require it (with some kernel options turned on). I'm completely stuck as to why this isn't working. I did two ubuntu 18 clean installs already, download the 4.19 kernel, make oldconfig (or olddefconfig), install modules and the kernel itself. After a reboot, the output just says

```
Loading Linux 4.19.237
Loading initial ramdisk
error: out of memory
Press any key to continue
```

After a key press it just shows the initial boot messages and an error stack:

```
0.5010391 md: autorun ...
0.5016781 md: ... autorun DONE.
0.5023101 VFS: Cannot open root device "UUID=cbc1623f-b651-454a-87dd-da2056dd5505" or unknown-block(0,0): error -6
0.5029261 Please append a correct "root=" boot option; here are the available partitions:
0.5035531 Kernel panic - not syncing: VFS: Unable to mount root fs on unknown-block(0,0)
0.5041851 CPU: 1 PID: 1 Comm: swapper/0 Not tainted 4.19.237 #1
0.5048211 Hardware name: Dell Inc. XPS 8910/0WPMFG, BIOS 1.1.8 02/12/2019
0.5054921 Call Trace:
0.5061221 dump_stack+0x6d/0x8b
0.5067401 panic+0xe4/0x247
0.5073531 mount_block_root+0x1f4/0x2db
0.5079631 ? set_debug_rodata+0x17/0x17
0.5085701 mount_root+0x7c/0x7f
0.5091751 prepare_namespace+0x139/0x171
0.5098261 kernel_init_freeable+0x252/0x27f
0.5104351 ? rest_init+0xb0/0xb0
0.5110381 kernel_init+0xe/0x110
0.5116371 ret_from_fork+0x35/0x40
0.5122781 Kernel Offset: 0x20600000 from 0xffffffff81000000 (relocation range: 0xffffffff80000000-0xffffffffbfffffff)
0.5129111 ---[ end Kernel panic - not syncing: VFS: Unable to mount root fs on unknown-block(0,0) ]---
0.5135341 -----[ cut here ]-----
0.5141501 sched: Unexpected reschedule of offline CPU#2!
0.5147701 WARNING: CPU: 1 PID: 1 at arch/x86/kernel/smp.c:128 native_smp_send_reschedule+0x3a/0x40
0.5154021 Modules linked in:
0.5160311 CPU: 1 PID: 1 Comm: swapper/0 Not tainted 4.19.237 #1
0.5166681 Hardware name: Dell Inc. XPS 8910/0WPMFG, BIOS 1.1.8 02/12/2019
0.5173161 RIP: 0010:native_smp_send_reschedule+0x3a/0x40
0.5179651 Code: 7a 83 01 73 17 48 8b 05 a4 b1 36 01 be fd 00 00 00 48 8b 40 30 e8 d6 55 da 00 5d c3 89 fe 48 c7 c7 a8 ef
0.5193491 RSP: 0000:ffff908b2ea43e08 EFLAGS: 00010082
0.5200471 RAX: 0000000000000000 RBX: 0000000000000002 RCX: ffffffff2c639a8
0.5207501 RDX: 0000000000000001 RSI: 0000000000000000 RDI: 0000000000000046
```

If I reboot, the older (4.15) kernel still boots and works perfectly.

Both entries on grub.cfg are similar

```
menuentry 'Ubuntu, with Linux 4.19.237' --class ubuntu --class gnu-linux --class
gnu --class os $menuentry_id_option 'gnulinux-4.19.237-advanced-cbc1623f-b651-
454a-87dd-da2056dd5505' {
    recordfail
    load_video
    gfxmode $linux_gfx_mode
    insmod gzio
```

```

        if [ x$grub_platform = xxen ]; then insmod xzio; insmod lzopio; fi
        insmod part_gpt
        insmod ext2
        set root='hd0,gpt2'
        if [ x$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 cbc1623f-b651-454a-87dd-
da2056dd5505
        else
            search --no-floppy --fs-uuid --set=root cbc1623f-b651-454a-87dd-
da2056dd5505
        fi
        echo      'Loading Linux 4.19.237 ...'
        linux     /boot/vmlinuz-4.19.237 root=UUID=cbc1623f-b651-454a-87dd-
da2056dd5505 ro
        echo      'Loading initial ramdisk ...'
        initrd    /boot/initrd.img-4.19.237
    }

menuentry 'Ubuntu, with Linux 4.15.0-20-generic' --class ubuntu --class gnu-linux
--class gnu --class os $menuentry_id_option 'gnulinux-4.15.0-20-generic-advanced-
cbc1623f-b651-45\4a-87dd-da2056dd5505' {
    recordfail
    load_video
    gfxmode $linux_gfx_mode
    insmod gzio
    if [ x$grub_platform = xxen ]; then insmod xzio; insmod lzopio; fi
    insmod part_gpt
    insmod ext2
    set root='hd0,gpt2'

```

I'm totally out of ideas. I have recompiled the kernel many times, disabled TPM in the BIOS, updated the BIOS, reinstalled ubuntu without LVM, tried recovery mode, changed from RAID to AHCI (there's only one disk).

Any ideas?

Edit: After searching around and changing configs everywhere I made it boot but I still run into the out of memory error, which requires me to press a key. I've enabled a bunch of VIRTIO, AHCI and other BLK parameters in the kernel. Then, when I pressed a button after the out of memory error, it showed a completely different list of UUIDs:

```

0.809582] sda: sda1 sda2
0.810346] sd 1:0:0:0: [sda] Attached SCSI disk
0.827283] sr 2:0:0:0: [sr0] scsi3-mmc drive: 24x/24x writer dvd-ram cd/rw xa/forw2 cdda tray
0.827834] cdrom: Uniform CD-ROM driver Revision: 3.20
0.828658] sr 2:0:0:0: Attached scsi generic sg1 type 5
0.829472] md: Waiting for all devices to be available before autodetect
0.830098] md: If you don't use raid, use raid=noautodetect
0.830717] md: Autodetecting RAID arrays.
0.831216] md: autorun ...
0.831714] md: ... autorun DONE.
0.832221] VFS: Cannot open root device "UUID=cbc1623f-b651-454a-87dd-da2056dd5505" or unknown-block(0,0): error -6
0.832727] Please append a correct "root=" boot option; here are the available partitions:
0.833238] 0800          976762584 sda
0.833241] driver: sd
0.834245] 0801          524288 sda1 e2d3819e-05df-4019-8399-310b50a15589
0.834245]
0.835247] 0802          976236544 sda2 f2c1daff-f903-40ba-8494-e928876a7bfc
0.835247]
0.836287] 0b00          1048575 sr0
0.836287] driver: sr
0.837283] Kernel panic - not syncing: VFS: Unable to mount root fs on unknown-block(0,0)
0.837807] CPU: 1 PID: 1 Comm: swapper/0 Not tainted 4.19.237 #2
0.838324] Hardware name: Dell Inc. XPS 8910/0WPMFG, BIOS 1.1.8 02/12/2019
0.838843] Call Trace:
0.839360] dump_stack+0x6d/0x8b
0.839880] panic+0xe4/0x247
0.840379] mount_block_root+0x1f4/0x2db
0.840874] ? set_debug_rodata+0x17/0x17
0.841386] mount_root+0x7c/0x7f
0.841880] prepare_namespace+0x139/0x171
0.842364] kernel_init_freeable+0x252/0x27f
0.842847] ? rest_init+0xb0/0xb0
0.843334] kernel_init+0xe/0x110
0.843978] ret_from_fork+0x35/0x40
0.844677] Kernel panic: ...

```

Which made me try not using UUIDs. So I changed grub to use `root=/dev/sda2`. One out of memory error and a key press after, I'm greeted by a long boot log and a login prompt.

For some reason the network device changed names (from `enp4s0` to `enp3s0`) with the new kernel, so I had to edit the netplan file and I had network.

Now, I still suffer from the out of memory error and I have no idea why. I need to fix this because I use this machine remotely and can't go to it whenever I need to reboot it. Still open to any ideas as to why this is happening in such a simple kernel upgrade.

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asked Apr 12, 2022 at 20:57

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1 Answer



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Turns out the `initrd` image was huge. 500MB in comparison to the default's 50MB. The key to reducing size was here: [How to reduce the size of the initrd when compiling your kernel?](#)

Basically: In `/etc/initramfs-tools/initramfs.conf` change `MODULES` to `MODULES=dep`.

When installing modules, pass a variable to strip debug symbols: `make INSTALL_MOD_STRIP=1 modules_install`

After this the out of memory error is gone, and so are the `vfs` errors for some reason. The `initrd` is less than 50MB now. Before applying these changes I did upgrade all packages,

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including the kernel, but it might not have had any impact.

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