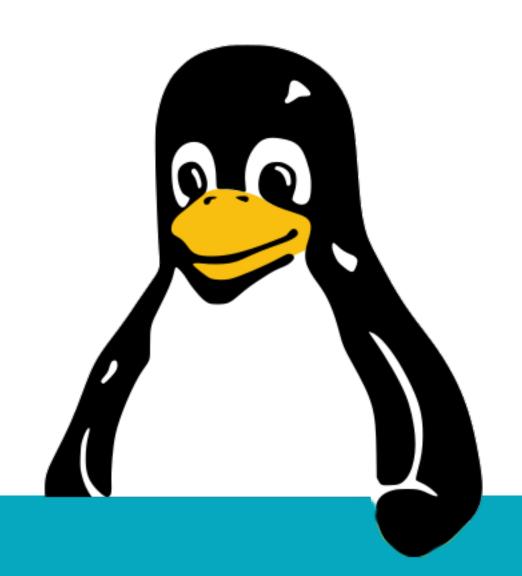# Linux, day 7

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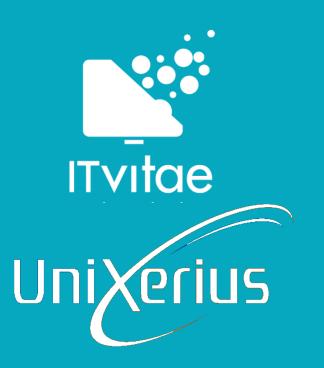
Objectives covered

Objective	Summary	Boek
1.1	Basic boot process	5
1.1	Kernel panic	5
1.7	Configure kernel options	14

LAB: The Linux boot process

Fedora: enable boot menu

- Edit "*/etc/default/grub*" and set these (no quotes!):
  - *GRUB_TIMEOUT=5*
  - *GRUB_TIMEOUT_STYLE=menu*
  - *GRUB_TERMINAL=console*
  - *GRUB_TERMINAL_OUTPUT=console*
- Then run:
  - *sudo grub2-mkconfig -o /boot/grub2/grub.cfg*
  - *sudo grub2-mkconfig -o /boot/efi/EFI/fedora/grub.cfg*

Ubuntu: enable boot menu

- Edit "*/etc/default/grub*" and set these (no quotes!):
  - *GRUB_TIMEOUT=5*
  - *GRUB_TIMEOUT_STYLE=menu*
  - *GRUB_TERMINAL=console*
  - *GRUB_TERMINAL_OUTPUT=console*
- Then run:
  - *sudo grub-mkconfig -o /boot/grub/grub.cfg*

Seeing the bootup

- Some Linuxen have "splash screens" or quiet boot.

- Reboot your VM and interrupt the GRUB2 menu.

- Select the default kernel, then press "e" to edit.

  - Remove the words "quiet", "rhgb" and "splash".

  - Continue booting

Logs once the host is up

```
$ dmesg | less

$ journalctl --list-boots      # Modern
$ journalctl -b                # Modern

$ tail -500 /var/log/messages  # Older
$ tail -500 /var/log/syslog    # Older
```

LAB: The Linux boot process

(╥﹏╥) I've lost my root!

- Oh no! We're locked out of our root account!
    - And our system refuses to boot.
- How we fix this, differs per distro...
- For safety, first <u>make a snapshot</u> of your VM.

Again, a warning!!

- For safety, first <u>make a snapshot</u> of your VM.

⚠️💀

RHEL, CentOS, Fedora (1)

- Reboot your VM and go into the GRUB2 editor.

- Edit the line with boot parameters:

  – Remove "*quiet*" and "rhgb"

  – Add "*init=/bin/sh*"

- Boot up…

- Mount / as writable: "*mount -o rw,remount /*"

RHEL, CentOS, Fedora (2)

- Go into */etc*.

- Make a backup copy of the "*shadow*" file.

- **Either** Run: "*passwd root*"

- **Or** use nano or vi to blank-out the root password.

- Run: "*touch /.autorelabel*"

See: SELinux and passwd in rescue mode

RHEL, CentOS, Fedora (3)

- Run: "*sync; sync; mount -o ro,remount /*"

- Reboot, or reset the VM

- Test your root account afterwards.
  - The password should be blank/empty,
  - Or the new value you gave with *passwd*.

Debian, Ubuntu, Kali (1)

- Reboot your VM and go into the GRUB2 editor.

- Edit the line with boot parameters:

  – Remove "*quiet*" and "rhgb"

  – Add "*init=/bin/bash*"

- Boot up…

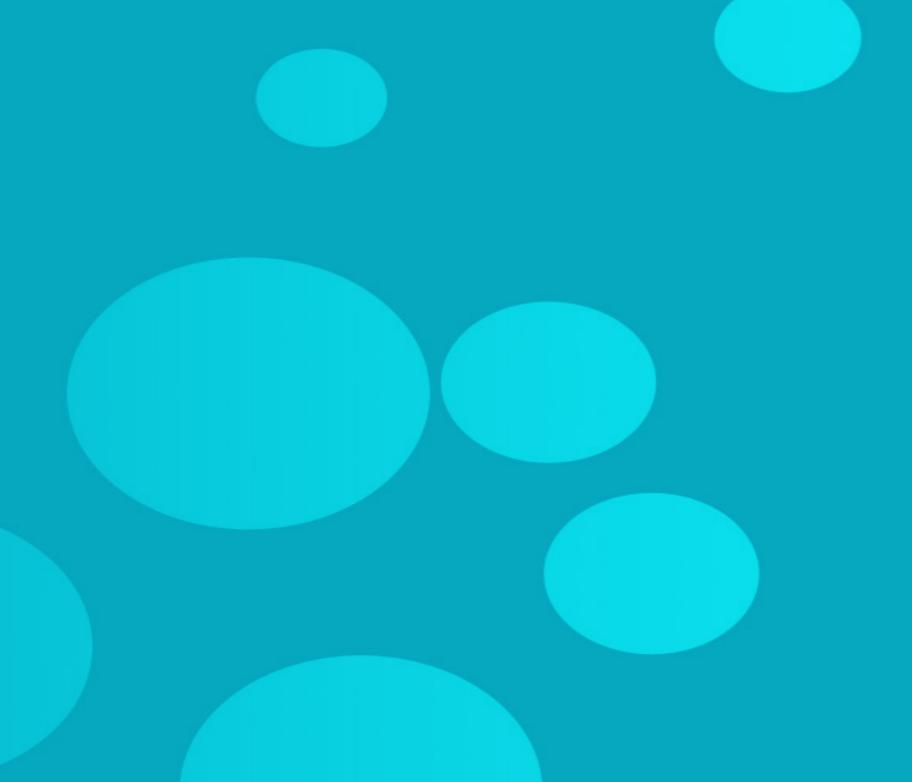- Mount / as writable: "*mount -o rw,remount /*"

Debian, Ubuntu, Kali (2)

- Go into */etc.*

- Make a backup copy of the "*shadow*" file.

- Run: "*passwd root*",
  - Or edit "*/etc/shadow*" with *vi/nano.*

- Run: "*sync; sync; mount -o ro,remount /*"

- Reboot

- Test your new root password afterwards.

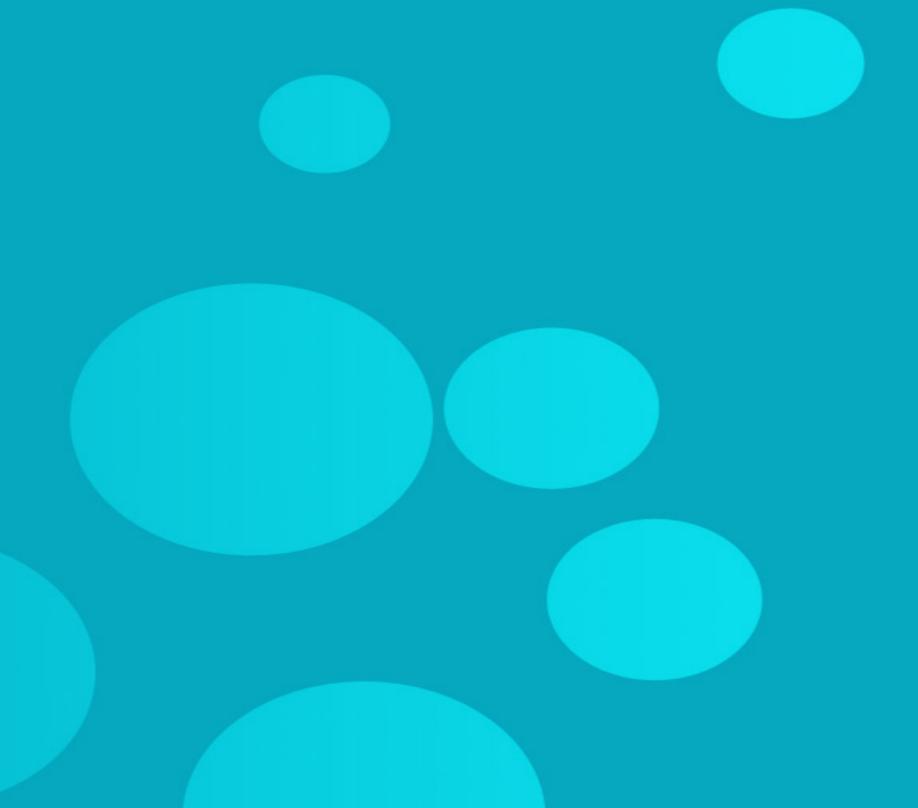# LAB: Kernel modules

Assignment

- Shutdown your VM.

- Add a new NIC to your VM (in Virtualbox).

  – You can put it in the NAT network.

  – This time, use <u>another hardware</u> type! Not e1000.

Assignment

- Boot the VM again.

- Check with "*dmesg*" if the hardware was seen.

  – Check if the right driver was loaded.

- Check with "*lsmod*" if you can see the driver.

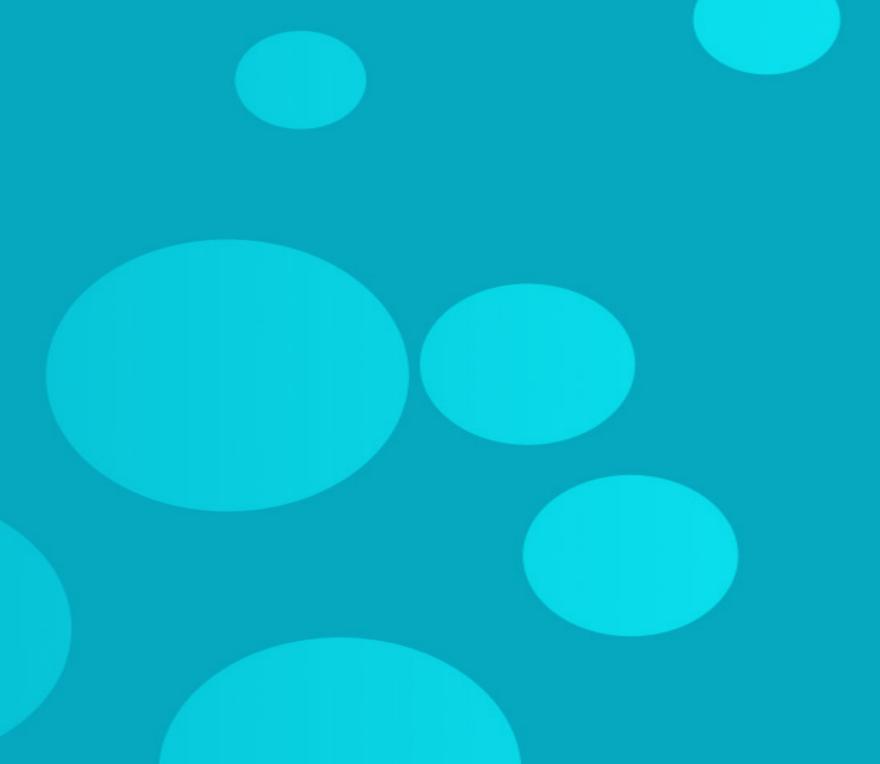# Closing

Homework

- Reading:
  - Chapters 28, 29 and 30.

Homework

- Go do:

  - Check your VMs: how many kernels do they have?

  - Install a second, or third kernel version.

  - Use GRUB2 to test booting the installed kernel.

Reference materials

Resources

- [Don't use NSCD](#)

- [Anatomy of a Linux DNS lookup](#)

- [The Linux boot process](#)

- [Step by step: Linux boot process explained](#)

- [EFI System Partition](#)

- [Initramfs, Dracut and the Dracut rescue shell](#)

Resources

- [Changing GRUB entries at boot](#)

- [Resetting passwords in single-user-mode](#)

- [SELinux and passwd in rescue mode](#)

- [What is the Linux kernel and what does it do?](#)