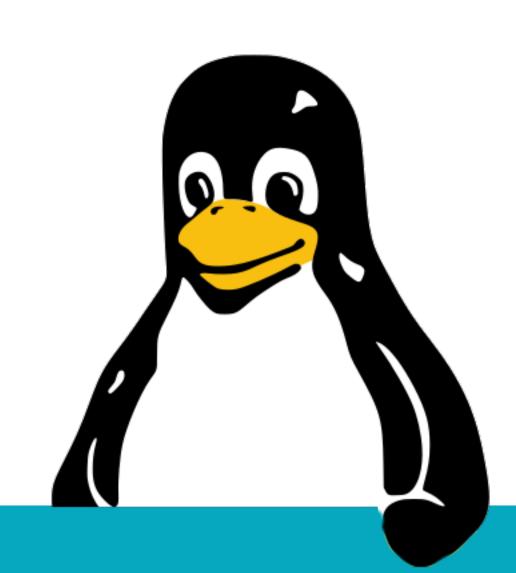
## Linux, day 7

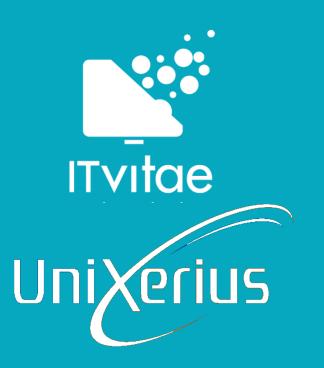




# Objectives covered

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
```

### LAB: The Linux boot process





#### (Two 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 make a snapshot of your VM.

### Again, a warning!!

• For safety, first make a snapshot 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 /"

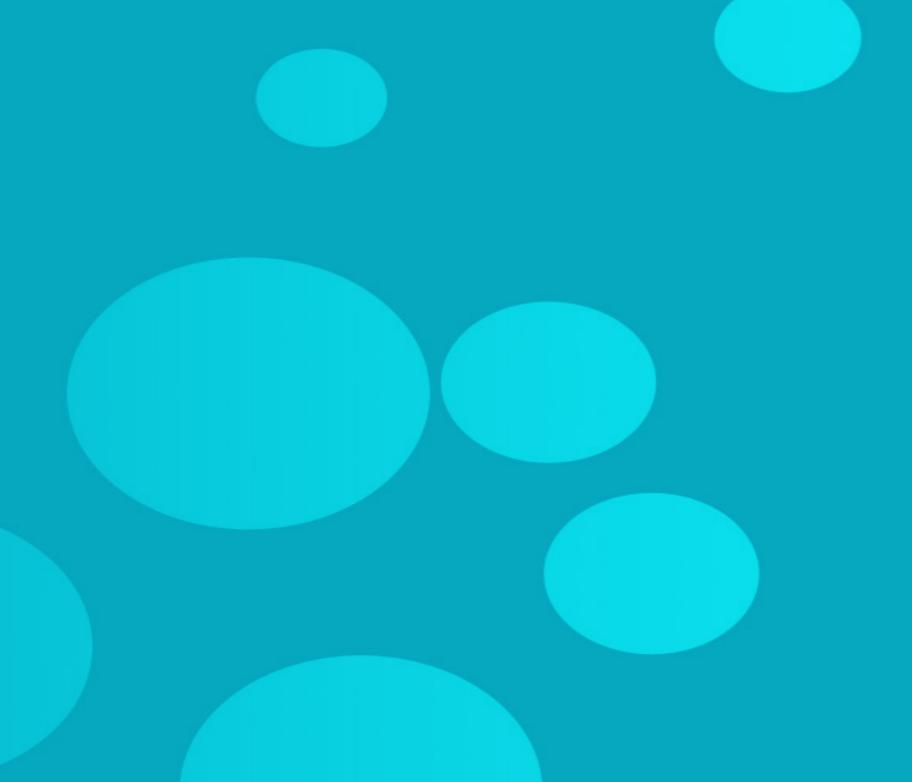
### Debian, Ubuntu, Kali (2)

- 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

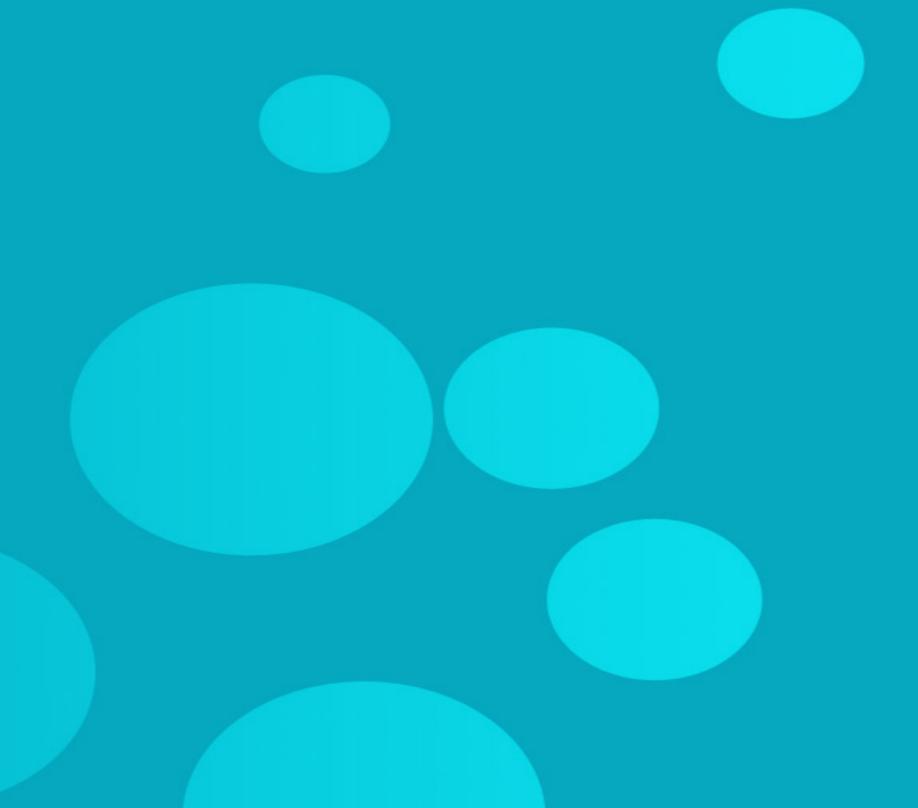
- Shutdown your VM.
- Add a new NIC to your VM (in Virtualbox).
  - You can put it in the NAT network.
  - This time, use another hardware type! Not e1000.

### Assignment

- Boot the VM again.
- Check with "dmesg" if the hardware was seen.
  - Check if the right driver was loaded.
- Check with "Ismod" if you can see the driver.

# Closing





#### Homework

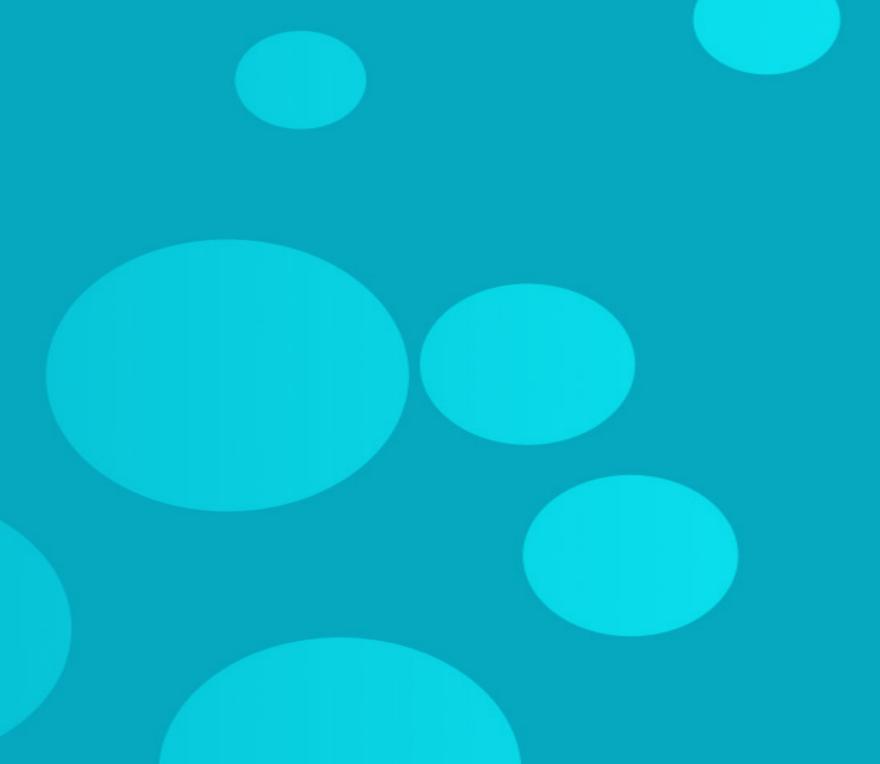
- Reading:
  - Chapters 28, 29 and 30.

#### 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?