

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        # 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 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 "*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?](#)