

Lo primero que hay que hacer es crear una carpeta, descargar el nucleo en esa carpeta, descomprimir, instalar una cuantas aplicaciones y con el comando make menuconfig empezar a configurarlo

```
.config - Linux/x86 5.9.3 Kernel Configuration

Linux/x86 5.9.3 Kernel Configuration
Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty
submenus ----). Highlighted letters are hotkeys. Pressing <Y>
includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to
exit, <?> for Help, </> for Search. Legend: [*] built-in [ ]

^(-)
[*] 64-bit kernel
    Processor type and features --->
    Power management and ACPI options --->
    Bus options (PCI etc.) --->
    Binary Emulations --->
    Firmware Drivers --->
[*] Virtualization --->
    General architecture-dependent options --->
[*] Enable loadable module support --->
[*] Enable the block layer --->
v(+)

<Select>    < Exit >    < Help >    < Save >    < Load >
```

```
.config - Linux/x86 5.9.3 Kernel Configuration
> File systems > DOS/FAT/EXFAT/NT Filesystems

DOS/FAT/EXFAT/NT Filesystems
Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty
submenus ----). Highlighted letters are hotkeys. Pressing <Y>
includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to
exit, <?> for Help, </> for Search. Legend: [*] built-in [ ]

<*> MSDOS fs support
<*> VFAT (Windows-95) fs support
(437) Default codepage for FAT
(iso8859-1) Default iocharset for FAT
[ ] Enable FAT UTF-8 option by default
<M> exFAT filesystem support
(utf8) Default iocharset for exFAT
<*> NTFS file system support
[ ] NTFS debugging support
[ ] NTFS write support

<Select>    < Exit >    < Help >    < Save >    < Load >
```

Para que sea compatible con el sistema de ficheros de minix hay que activar esta opción

```
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> File systems

File systems
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exit, <?> for Help, </> for Search. Legend: [*] built-in [ ]

^(-)
[*] Overlayfs: follow redirects even if redirects are turned of
[ ] Overlayfs: turn on inodes index feature by default
[*] Overlayfs: auto enable inode number mapping
[ ] Overlayfs: turn on metadata only copy up feature by default
  Caches --->
  CD-ROM/DVD Filesystems --->
  DOS/FAT/EXFAT/NT Filesystems --->
  Pseudo filesystems --->
  [*] Miscellaneous filesystems --->
  [*] Network File Systems --->
v(+)

<Select> < Exit > < Help > < Save > < Load >
```

```
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> File systems

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exit, <?> for Help, </> for Search. Legend: [*] built-in [ ]

[*] Validate filesystem parameter description
< > Second extended fs support
< > The Extended 3 (ext3) filesystem
[*] The Extended 4 (ext4) filesystem
  [*] Use ext4 for ext2 file systems
  [*] Ext4 POSIX Access Control Lists
  [*] Ext4 Security Labels
  [ ] Ext4 debugging support
  [ ] JBD2 (ext4) debugging support
  <M> Reiserfs support
v(+)

<Select> < Exit > < Help > < Save > < Load >
```

.config - Linux/x86 5.9.3 Kernel Configuration

> Networking support > Networking options

Networking options

Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus ----). Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] built-in []

^(-)

[*] Transformation statistics

<M> PF_KEY sockets

[] PF_KEY MIGRATE

<M> SMC socket protocol family

<M> SMC: socket monitoring interface

[*] XDP sockets

<M> XDP sockets: monitoring interface

[*] **TCP/IP networking**

[*] IP: multicasting

[*] IP: advanced router

v(+)

<Select>

< Exit >

< Help >

< Save >

< Load >

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^(-)

<M> IP: IPComp transformation

<M> INET: socket monitoring interface

<M> UDP: socket monitoring interface

<M> RAW: socket monitoring interface

[*] INET: allow privileged process to administratively close

[*] TCP: advanced congestion control --->

[*] TCP: MD5 Signature Option support (RFC2385)

<*> **The IPv6 protocol --->**

-*- NetLabel subsystem support

[] MPTCP: Multipath TCP (NEW)

v(+)

<Select>

< Exit >

< Help >

< Save >

< Load >

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> Networking support

Networking support

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^(-)

<M> Bluetooth subsystem support --->
{M} RxRPC session sockets
[*] IPv6 support for RxRPC
[] Inject packet loss into RxRPC packet stream
[] RxRPC dynamic debugging
[*] RxRPC Kerberos security
<M> KCM sockets
-* Wireless --->
<M> WiMAX Wireless Broadband support --->
<*> RF switch subsystem support --->

v(+)

<Select>

< Exit >

< Help >

< Save >

< Load >

.config - Linux/x86 5.9.3 Kernel Configuration

> Networking support

Networking support

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-* Wireless --->
<*> WiMAX Wireless Broadband support --->
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v(+)

<Select>

< Exit >

< Help >

< Save >

< Load >

.config - Linux/x86 5.9.3 Kernel Configuration

> General setup > Timers subsystem

Timers subsystem

Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus ----). Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] built-in []

Timer tick handling (Idle dynticks system (tickless idle)) -
[*] Old Idle dynticks config
[*] High Resolution Timer Support

<Select>

< Exit >

< Help >

< Save >

< Load >

.config - Linux/x86 5.9.3 Kernel Configuration

> Power management and ACPI options > CPU Frequency scaling

CPU Frequency scaling

Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus ----). Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] built-in []

**- CPU Frequency scaling

[*] CPU frequency transition statistics
Default CPUFreq governor (performance) --->
**- 'performance' governor
<*> 'powersave' governor
<*> 'userspace' governor for userspace frequency scaling
<*> 'ondemand' cpufreq policy governor
<*> 'conservative' cpufreq governor
**- 'schedutil' cpufreq policy governor
*** CPU frequency scaling drivers ***

v(+)

<Select>

< Exit >

< Help >

< Save >

< Load >

```

HDIRINST usr/include/asm/resource.h
HDIRINST usr/include/asm/types.h
HDIRINST usr/include/asm/termbits.h
HDIRINST usr/include/asm/unistd_32.h
HDIRINST usr/include/asm/ioctl.h
HDIRINST usr/include/asm/ioctls.h
HDIRINST usr/include/asm/fcntl.h
INSTALL debian/linux-libc-dev/usr/include
dpkg-deb: construyendo el paquete `linux-libc-dev' en `../linux-libc-dev_5.9.3-1_amd64.deb'.
dpkg-deb: construyendo el paquete `linux-image-5.9.3' en `../linux-image-5.9.3_5.9.3-1_amd64.deb'.
dpkg-deb: construyendo el paquete `linux-image-5.9.3-dbg' en `../linux-image-5.9.3-dbg_5.9.3-1_amd64.deb'.

dpkg-genbuildinfo
dpkg-genchanges ->../linux-5.9.3_5.9.3-1_amd64.changes
dpkg-genchanges: información: incluyendo el código fuente completo en la subida
dpkg-source -i.git --after-build .
dpkg-buildpackage: información: subida completa (se incluye la fuente original)
leo@leo-VirtualBox:~/nucleo/linux-5.9.3$ <div

```

```

leo@leo-VirtualBox:~/nucleo$ ls
linux-5.9.3                linux-5.9.3_5.9.3-1.dsc                linux-image-5.9.3_5.9.3-1_amd64.deb
linux-5.9.3_5.9.3-1_amd64.buildinfo  linux-5.9.3_5.9.3.orig.tar.gz          linux-image-5.9.3-dbg_5.9.3-1_amd64.deb
linux-5.9.3_5.9.3-1_amd64.changes    linux-5.9.3.tar.xz                     linux-libc-dev_5.9.3-1_amd64.deb
linux-5.9.3_5.9.3-1.diff.gz          linux-headers-5.9.3_5.9.3-1_amd64.deb

```

Despues de muchas horas de compilar, termino.

Y luego use los comandos dpkg -i para las .deb

```

leo@leo-VirtualBox:~/nucleo$ sudo dpkg -i linux-image-5.9.3_5.9.3-1_amd64.deb
[sudo] contraseña para leo:
seleccionando el paquete linux-image-5.9.3 previamente no seleccionado.
(Leyendo la base de datos ... 238622 ficheros o directorios instalados actualmente.)
Preparando para desempaquetar linux-image-5.9.3_5.9.3-1_amd64.deb ...
Desempaquetando linux-image-5.9.3 (5.9.3-1) ...
Configurando linux-image-5.9.3 (5.9.3-1) ...
update-initramfs: Generating /boot/initrd.img-5.9.3
Obteniendo el archivo «/etc/default/grub»
Obteniendo el archivo «/etc/default/grub.d/init-select.cfg»
Generando un fichero de configuración de grub...
Encontrada imagen de linux: /boot/vmlinuz-5.9.3
Encontrada imagen de memoria inicial: /boot/initrd.img-5.9.3
Encontrada imagen de linux: /boot/vmlinuz-5.4.0-52-generic
Encontrada imagen de memoria inicial: /boot/initrd.img-5.4.0-52-generic
Encontrada imagen de linux: /boot/vmlinuz-5.4.0-42-generic
Encontrada imagen de memoria inicial: /boot/initrd.img-5.4.0-42-generic
found memtest86+ image: /boot/memtest86+.elf
found memtest86+ image: /boot/memtest86+.bin
hecho
leo@leo-VirtualBox:~/nucleo$ dpkg -i linux-headers-5.9.3_5.9.3-1_amd64.deb
dpkg: error: la operación solicitada precisa privilegios de superusuario
leo@leo-VirtualBox:~/nucleo$ sudo dpkg -i linux-headers-5.9.3_5.9.3-1_amd64.deb
seleccionando el paquete linux-headers-5.9.3 previamente no seleccionado.
(Leyendo la base de datos ... 245135 ficheros o directorios instalados actualmente.)
Preparando para desempaquetar linux-headers-5.9.3_5.9.3-1_amd64.deb ...
Desempaquetando linux-headers-5.9.3 (5.9.3-1) ...
Configurando linux-headers-5.9.3 (5.9.3-1) ...
leo@leo-VirtualBox:~/nucleo$ sudo dpkg -i linux-libc-dev_5.9.3-1_amd64.deb
(Leyendo la base de datos ... 263253 ficheros o directorios instalados actualmente.)
Preparando para desempaquetar linux-libc-dev 5.9.3-1 amd64.deb ...

```

Y ahora compruebo que el núcleo se ha instalado correctamente


```
leo@leo-VirtualBox: ~/nucleo/linux-5.9.3
*** End of the configuration.
*** Execute 'make' to start the build or try 'make help'.

leo@leo-VirtualBox:~/nucleo/linux-5.9.3$ make menuconfig
scripts/kconfig/mconf Kconfig
configuration written to .config

*** End of the configuration.
*** Execute 'make' to start the build or try 'make help'.

leo@leo-VirtualBox:~/nucleo/linux-5.9.3$ uname -a
Linux leo-VirtualBox 5.9.3 #1 SMP Tue Nov 3 10:56:58 CET 2020 x86_64 x86_64 x86_64 GNU/Linux

leo@leo-VirtualBox:~/nucleo/linux-5.9.3$ ls /boot
config-5.4.0-52-generic      memtest86+.elf
config-5.9.3                memtest86+_multiboot.bin
efi                          System.map-5.4.0-52-generic
grub                         System.map-5.9.3
initrd.img                  vmlinuz
initrd.img-5.4.0-52-generic vmlinuz-5.4.0-52-generic
initrd.img-5.9.3           vmlinuz-5.9.3
initrd.img.old              vmlinuz.old
memtest86+.bin
leo@leo-VirtualBox:~/nucleo/linux-5.9.3$
```

Para hacer la 2 compilación voy a hacer todos los pasos, pero no compilare ya que para el núcleo 1 me tardo mas de 6 horas

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> Networking support

Networking support

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{M} RxRPC session sockets
[*] IPv6 support for RxRPC
[] Inject packet loss into RxRPC packet stream
[] RxRPC dynamic debugging
[*] RxRPC Kerberos security
<M> KCM sockets
[*] **Wireless --->**
<M> WiMAX Wireless Broadband support --->
<*> RF switch subsystem support --->
v(+)

<Select>

< Exit >

< Help >

< Save >

< Load >

.config - Linux/x86 5.9.3 Kernel Configuration

> Networking support > Networking options

Networking options

Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus ----). Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] built-in []

^(-)

[] Transformation migrate database
[*] Transformation statistics
<M> PF_KEY sockets
[] PF_KEY MIGRATE
<M> SMC socket protocol family
<M> SMC: socket monitoring interface
[*] XDP sockets
<M> XDP sockets: monitoring interface
[*] **TCP/IP networking**
[*] IP: multicasting
v(+)

<Select>

< Exit >

< Help >

< Save >

< Load >

.config - Linux/x86 5.9.3 Kernel Configuration

> Device Drivers

Device Drivers

Arrow keys navigate the menu. <Enter> selects submenus ---> (or empty submenus ----). Highlighted letters are hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press <Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] built-in []

^(-)

```
<*> RapidIO support --->
    Generic Driver Options --->
    Bus devices --->
    [*] Connector - unified userspace <-> kernelspace linker --->
    <M> GNSS receiver support --->
    <M> Memory Technology Device (MTD) support --->
    [ ] Device Tree and Open Firmware support ----
    <M> Parallel port support --->
    -*- Plug and Play support --->
    [*] Block devices --->
```

v(+)

<Select> < Exit > < Help > < Save > < Load >

.config - Linux/x86 5.9.3 Kernel Configuration

> Power management and ACPI options > CPU Frequency scaling

CPU Frequency scaling

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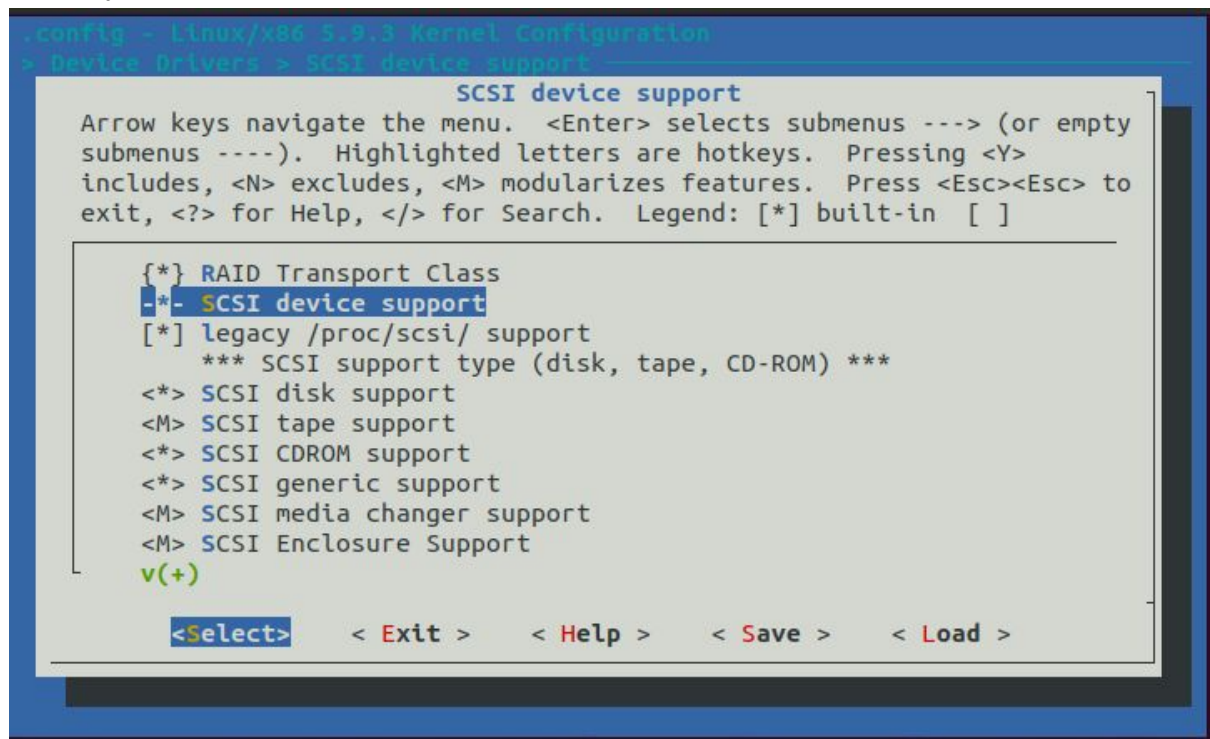
-*- CPU Frequency scaling

```
[*] CPU frequency transition statistics
    Default CPUFreq governor (performance) --->
    -*- 'performance' governor
    <*> 'powersave' governor
    <*> 'userspace' governor for userspace frequency scaling
    <*> 'ondemand' cpufreq policy governor
    <*> 'conservative' cpufreq governor
    -*- 'schedutil' cpufreq policy governor
    *** CPU frequency scaling drivers ***
```

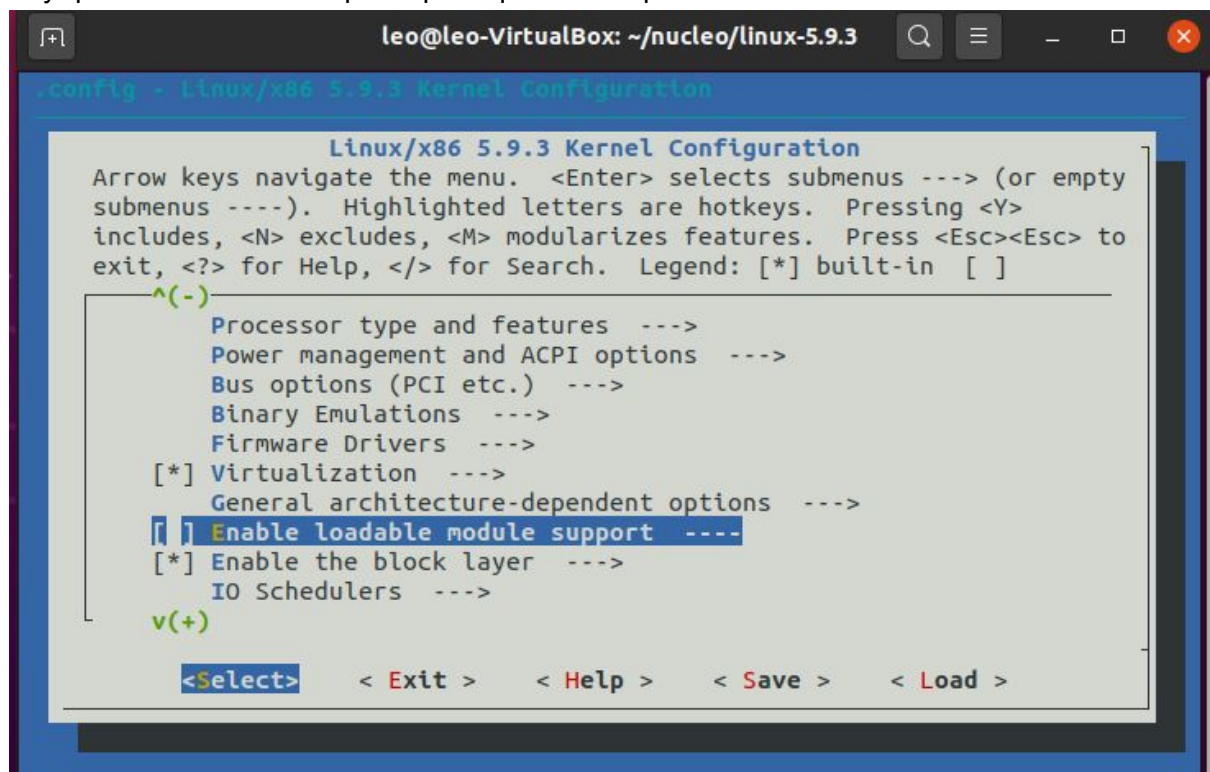
v(+)

<Select> < Exit > < Help > < Save > < Load >

Esto hay que activar para que el usb sea compatible



Hay que desactivar esta opción para que sea un procesador monolítico



Para compilar hay que hacer los mismo pasos que antes y una vez compilado se instala con `dpkg -i` como lo hice antes

El parcheo no lo he hecho