

ES_HW03 109598085

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Part 1 : Console message of your compiled Linux Kernel

The image displays three screenshots of a Linux kernel compilation and installation process within a virtual machine environment.

The top screenshot shows the kernel compilation progress in a terminal window. The output lists various kernel modules being compiled, including sound/usb/line6/snd-usb-pod.mod.o, sound/usb/line6/snd-usb-podhd.mod.o, sound/usb/line6/snd-usb-toneport.mod.o, sound/usb/line6/snd-usb-variax.mod.o, sound/usb/misc/snd-ua101.mod.o, sound/usb/snd-usb-audio.mod.o, sound/usb/snd-usbmidi-lib.mod.o, sound/usb/usx2y/snd-usb-us122l.mod.o, sound/usb/usx2y/snd-usb-usx2y.mod.o, sound/x86/snd-hdmi-lpe-audio.mod.o, sound/xen/snd_xen_front.mod.o, and scripts/gdb/linux/constants.py. The process concludes with the message "user@user-VirtualBox: ~/Documents/ES/Kernel/linux-5.9.2\$".

The middle screenshot shows a file manager window displaying the contents of the "linux-5.9.2" directory. The files listed include bitops.h, boot.h, bzImage, cmdline.c, cmdline.o, code16gcc.h, copy.o, copy.S, cpu.c, cpu.o, and cpucheck.c. The "bzImage" file is highlighted. The terminal window in the background shows the user navigating to the "arch/x86/boot" directory and running "make". The output indicates that the kernel is ready for installation, with the message "Kernel: arch/x86/boot/bzImage is ready (#1)".

The bottom screenshot shows the kernel installation progress in a terminal window. The output lists various kernel modules being installed, including sound/soc/xtensa/snd-soc-xtfpga-i2s.ko, sound/soc/zte/zx-tdm.ko, sound/soundcore.ko, sound/synth/emux/snd-emux-synth.ko, sound/synth/snd-util-mem.ko, sound/usb/6fire/snd-usb-6fire.ko, sound/usb/bcd2000/snd-bcd2000.ko, sound/usb/caiaq/snd-usb-caiaq.ko, sound/usb/hiface/snd-usb-hiface.ko, sound/usb/line6/snd-usb-line6.ko, sound/usb/line6/snd-usb-pod.ko, sound/usb/line6/snd-usb-podhd.ko, sound/usb/line6/snd-usb-toneport.ko, sound/usb/line6/snd-usb-variax.ko, sound/usb/misc/snd-ua101.ko, sound/usb/snd-usb-audio.ko, sound/usb/snd-usbmidi-lib.ko, sound/usb/usx2y/snd-usb-us122l.ko, sound/usb/usx2y/snd-usb-usx2y.ko, sound/x86/snd-hdmi-lpe-audio.ko, and sound/xen/snd_xen_front.ko. The process concludes with the message "user@user-VirtualBox: ~/Documents/ES/Kernel/linux-5.9.2\$".

```
user@user-VirtualBox: ~/Documents/ES/Kernel/linux-5.9.2
INSTALL sound/synth/emux/snd-emux-synth.ko
INSTALL sound/synth/snd-util-mem.ko
INSTALL sound/usb/6fire/snd-usb-6fire.ko
INSTALL sound/usb/bcd2000/snd-bcd2000.ko
INSTALL sound/usb/caiaq/snd-usb-caiaq.ko
INSTALL sound/usb/hiface/snd-usb-hiface.ko
INSTALL sound/usb/line6/snd-usb-line6.ko
INSTALL sound/usb/line6/snd-usb-pod.ko
INSTALL sound/usb/line6/snd-usb-podhd.ko
INSTALL sound/usb/line6/snd-usb-toneport.ko
INSTALL sound/usb/line6/snd-usb-variax.ko
INSTALL sound/usb/misc/snd-ua101.ko
INSTALL sound/usb/snd-usb-audio.ko
INSTALL sound/usb/snd-usbmidi-lib.ko
INSTALL sound/usb/usx2y/snd-usb-us122l.ko
INSTALL sound/usb/usx2y/snd-usb-usx2y.ko
INSTALL sound/x86/snd-hdmi-lpe-audio.ko
INSTALL sound/xen/snd_xen_front.ko
DEPMOD 5.9.2
user@user-VirtualBox:~/Documents/ES/Kernel/linux-5.9.2$ sudo make install
sh ./arch/x86/boot/install.sh 5.9.2 arch/x86/boot/bzImage \
System.map "/boot"
run-parts: executing /etc/kernel/postinst.d/apt-auto-removal 5.9.2 /boot/vmlinuz-5.9.2
run-parts: executing /etc/kernel/postinst.d/initramfs-tools 5.9.2 /boot/vmlinuz-5.9.2
update-initramfs: Generating /boot/initrd.img-5.9.2
run-parts: executing /etc/kernel/postinst.d/unattended-upgrades 5.9.2 /boot/vmlinuz-5.9.2
run-parts: executing /etc/kernel/postinst.d/update-notifier 5.9.2 /boot/vmlinuz-5.9.2
run-parts: executing /etc/kernel/postinst.d/vboxadd 5.9.2 /boot/vmlinuz-5.9.2
VirtualBox Guest Additions: Building the modules for kernel 5.9.2.

VirtualBox Guest Additions: Look at /var/log/vboxadd-setup.log to find out what
went wrong
run-parts: executing /etc/kernel/postinst.d/zz-update-grub 5.9.2 /boot/vmlinuz-5.9.2
Sourcing file '/etc/default/grub'
Sourcing file '/etc/default/grub.d/init-select.cfg'
Generating grub configuration file ...
Found linux image: /boot/vmlinuz-5.9.2
Found initrd image: /boot/initrd.img-5.9.2
Found linux image: /boot/vmlinuz-5.4.0-56-generic
Found initrd image: /boot/initrd.img-5.4.0-56-generic
Found linux image: /boot/vmlinuz-5.4.0-42-generic
Found initrd image: /boot/initrd.img-5.4.0-42-generic
Found memtest86+ image: /boot/memtest86+.elf
Found memtest86+ image: /boot/memtest86+.bin
done
user@user-VirtualBox:~/Documents/ES/Kernel/linux-5.9.2$
```

Part 2 : Hello World message from dmsg after your new Linux Kernel is installed

```
user@user-VirtualBox: ~
05:41:53.352636 main      Process ID: 919
05:41:53.352637 main      Package type: LINUX_64BITS_GENERIC
[ 16.411103] 05:41:53.353870 main      6.1.16 r140961 started. Verbose level =
0
[ 16.411781] 05:41:53.354542 main      vbglR3GuestCtrlDetectPeekGetCancelSupport
t: Supported (#1)
[ 18.368369] rfkill: input handler disabled
[ 24.767047] rfkill: input handler enabled
[ 27.396198] rfkill: input handler disabled
[ 27.760523] kauditd_printk_skb: 31 callbacks suppressed
[ 27.760525] audit: type=1400 audit(1607492524.705:59): apparmor="DENIED" oper
ation="capable" profile="/snap/snapd/10492/usr/lib/snapd/snap-confine" pid=1871
comm="snap-confine" capability=4 capname="fsetid"
[ 29.783919] audit: type=1326 audit(1607492526.730:60): auid=1000 uid=1000 gid
=1000 ses=3 subj==snap.snap-store.ubuntu-software (enforce) pid=1871 comm="snap-
store" exe="/snap/snap-store/498/usr/bin/snap-store" sig=0 arch=c0000003e syscall
=314 compat=0 ip=0x7f30cb90e959 code=0x50000
[ 41.935077] audit: type=1326 audit(1607492540.366:61): auid=1000 uid=1000 gid
=1000 ses=3 subj==snap.snap-store.ubuntu-software (enforce) pid=1871 comm="pool-
org.gnome." exe="/snap/snap-store/498/usr/bin/snap-store" sig=0 arch=c0000003e sy
scall=93 compat=0 ip=0x7f30cb904527 code=0x50000
[ 685.285330] Hello 109598085 !
[ 755.562382] 109598085 Bye !
user@user-VirtualBox:~$
```