```
nadim@nadim-pc:~/opencn2/agency$ ./build.sh -r
read target from the file
-- [ Build rootfs ] ---------------------------------------
Config=x86-qemu_defconfig
make -C ../../buildroot BR2_EXTERNAL_DIRS="../agency/rootfs" O=/home/nadim/opencn2/
agency/rootfs/. x86-qemu_defconfig
#
# configuration written to /home/nadim/opencn2/agency/rootfs/.config
#
make -C ../../buildroot BR2_EXTERNAL_DIRS="../agency/rootfs" O=/home/nadim/opencn2/
agency/rootfs/. source
/usr/bin/make -j1 O=/home/nadim/opencn2/agency/rootfs HOSTCC="/usr/bin/gcc"
HOSTCXX="/usr/bin/g++" syncconfig
make -C ../../buildroot BR2_EXTERNAL_DIRS="../agency/rootfs" O=/home/nadim/opencn2/
agency/rootfs/.
>>>   Finalizing host directory
>>>   Finalizing target directory
mkdir -p /home/nadim/opencn2/agency/rootfs/host/etc/meson
sed -e 's%@TARGET_CROSS@%/home/nadim/opencn2/agency/rootfs/host/bin/x86_64-
buildroot-linux-gnu-%g' -e 's%@TARGET_ARCH@%x86_64%g' -e 's%@TARGET_CPU@%%g' -e
's%@TARGET_ENDIAN@%little%g' -e "s%@TARGET_CFLAGS@%'-D_LARGEFILE_SOURCE', '-
D_LARGEFILE64_SOURCE', '-D_FILE_OFFSET_BITS=64', '-Os'@PKG_TARGET_CFLAGS@%g" -e
"s%@TARGET_LDFLAGS@%@PKG_TARGET_CFLAGS@%g" -e "s%@TARGET_CXXFLAGS@%'-
D_LARGEFILE_SOURCE', '-D_LARGEFILE64_SOURCE', '-D_FILE_OFFSET_BITS=64', '-
Os'@PKG_TARGET_CFLAGS@%g" -e 's%@HOST_DIR@%/home/nadim/opencn2/agency/
rootfs/host%g' -e 's%@STAGING_DIR@%/home/nadim/opencn2/agency/rootfs/host/x86_64-
buildroot-linux-gnu/sysroot%g' -e 's%@STATIC@%false%g' package/meson//cross-
compilation.conf.in > /home/nadim/opencn2/agency/rootfs/host/etc/meson/cross-
compilation.conf.in
sed -e 's%@PKG_TARGET_CFLAGS@%%g' -e 's%@PKG_TARGET_LDFLAGS@%%g' -e
's%@PKG_TARGET_CXXFLAGS@%%g' /home/nadim/opencn2/agency/rootfs/host/etc/
meson/cross-compilation.conf.in > /home/nadim/opencn2/agency/rootfs/host/etc/meson/
cross-compilation.conf
grep -qsE '^/bin/bash$' /home/nadim/opencn2/agency/rootfs/target/etc/shells || echo "/
bin/bash" >> /home/nadim/opencn2/agency/rootfs/target/etc/shells
/usr/bin/sed -i -e '/# GENERIC_SERIAL$/s~^.*#~#ttyS0::respawn:/sbin/getty -L ttyS0 115200
vt100 #~' /home/nadim/opencn2/agency/rootfs/target/etc/inittab
/usr/bin/sed -i -e '/^#.*-o remount,rw \/$/s~^#\+~~' /home/nadim/opencn2/agency/rootfs/
target/etc/inittab
if grep -q CONFIG_ASH=y /home/nadim/opencn2/agency/rootfs/build/
busybox-1.33.0/.config; then grep -qsE '^/bin/ash$' /home/nadim/opencn2/agency/rootfs/
target/etc/shells || echo "/bin/ash" >> /home/nadim/opencn2/agency/rootfs/target/etc/
```

```
shells; fi
if grep -q CONFIG_HUSH=y /home/nadim/opencn2/agency/rootfs/build/
busybox-1.33.0/.config; then grep -qsE '^/bin/hush$' /home/nadim/opencn2/agency/rootfs/
target/etc/shells || echo "/bin/hush" >> /home/nadim/opencn2/agency/rootfs/target/etc/
shells; fi
mkdir -p /home/nadim/opencn2/agency/rootfs/target/etc
echo "opencn" > /home/nadim/opencn2/agency/rootfs/target/etc/hostname
/usr/bin/sed -i -e '$a \127.0.1.1\topencn' -e '/^127.0.1.1/d' /home/nadim/opencn2/agency/
rootfs/target/etc/hosts
mkdir -p /home/nadim/opencn2/agency/rootfs/target/etc
echo "Welcome to Buildroot" > /home/nadim/opencn2/agency/rootfs/target/etc/issue
/usr/bin/sed -i -e s,^root:[^:]*:,root:"`/home/nadim/opencn2/agency/rootfs/host/bin/
mkpasswd -m "sha-256" "root"`":, /home/nadim/opencn2/agency/rootfs/target/etc/shadow
grep -qsE '^/bin/sh$' /home/nadim/opencn2/agency/rootfs/target/etc/shells || echo "/bin/
sh" >> /home/nadim/opencn2/agency/rootfs/target/etc/shells
if [ -x /home/nadim/opencn2/agency/rootfs/target/sbin/swapon -a -x /home/nadim/
opencn2/agency/rootfs/target/sbin/swapoff ]; then /usr/bin/sed -i -e '/^#.*\/sbin\/swap/s/
^#\+[[:blank:]]*//' /home/nadim/opencn2/agency/rootfs/target/etc/inittab; else /usr/bin/sed
-i -e '/^[^#].*\/sbin\/swap/s/^/#/' /home/nadim/opencn2/agency/rootfs/target/etc/inittab; fi
printf '%s\n' C en_US locale-archive > /home/nadim/opencn2/agency/rootfs/build/
locales.nopurge
for dir in /home/nadim/opencn2/agency/rootfs/target/usr/share/locale /home/nadim/
opencn2/agency/rootfs/target/usr/share/X11/locale /home/nadim/opencn2/agency/rootfs/
target/usr/lib/locale; do if [ ! -d $dir ]; then continue; fi; for langdir in $dir/*; do if [ -e "$
{langdir}" ]; then grep -qx "${langdir##*/}" /home/nadim/opencn2/agency/rootfs/build/
locales.nopurge || rm -rf $langdir; fi done; done
if [ -d /home/nadim/opencn2/agency/rootfs/target/usr/share/X11/locale ]; then for lang in C
en_US; do if [ -f /home/nadim/opencn2/agency/rootfs/target/usr/share/X11/locale/$lang/
XLC_LOCALE ]; then echo "$lang/XLC_LOCALE: $lang"; fi done > /home/nadim/opencn2/
agency/rootfs/target/usr/share/X11/locale/locale.dir; fi
rm -rf /home/nadim/opencn2/agency/rootfs/target/usr/include /home/nadim/opencn2/
agency/rootfs/target/usr/share/aclocal \
    /home/nadim/opencn2/agency/rootfs/target/usr/lib/pkgconfig /home/nadim/opencn2/
agency/rootfs/target/usr/share/pkgconfig \
    /home/nadim/opencn2/agency/rootfs/target/usr/lib/cmake /home/nadim/opencn2/
agency/rootfs/target/usr/share/cmake \
    /home/nadim/opencn2/agency/rootfs/target/usr/doc
find /home/nadim/opencn2/agency/rootfs/target/usr/{lib,share}/ -name '*.cmake' -print0 |
xargs -0 rm -f
find /home/nadim/opencn2/agency/rootfs/target/lib/ /home/nadim/opencn2/agency/
rootfs/target/usr/lib/ /home/nadim/opencn2/agency/rootfs/target/usr/libexec/ \
    \( -name '*.a' -o -name '*.la' -o -name '*.prl' \) -print0 | xargs -0 rm -f
```

```
rm -rf /home/nadim/opencn2/agency/rootfs/target/usr/share/gdb
rm -rf /home/nadim/opencn2/agency/rootfs/target/usr/share/zsh
rm -rf /home/nadim/opencn2/agency/rootfs/target/usr/man /home/nadim/opencn2/
agency/rootfs/target/usr/share/man
rm -rf /home/nadim/opencn2/agency/rootfs/target/usr/info /home/nadim/opencn2/
agency/rootfs/target/usr/share/info
rm -rf /home/nadim/opencn2/agency/rootfs/target/usr/doc /home/nadim/opencn2/
agency/rootfs/target/usr/share/doc
rm -rf /home/nadim/opencn2/agency/rootfs/target/usr/share/gtk-doc
rmdir /home/nadim/opencn2/agency/rootfs/target/usr/share 2>/dev/null || true
rm -rf /home/nadim/opencn2/agency/rootfs/target/lib/debug /home/nadim/opencn2/
agency/rootfs/target/usr/lib/debug
find /home/nadim/opencn2/agency/rootfs/target   -type f \( -perm /111 -o -name '*.so*' \) -
not \( -name 'libpthread*.so*' -o -name 'ld-*.so*' -o -name '*.ko' \) -print0 | xargs -0 /home/
nadim/opencn2/agency/rootfs/host/bin/x86_64-buildroot-linux-gnu-strip --remove-
section=.comment --remove-section=.note 2>/dev/null || true
find /home/nadim/opencn2/agency/rootfs/target   \( -name 'ld-*.so*' -o -name
'libpthread*.so*' \) -print0 | xargs -0 -r /home/nadim/opencn2/agency/rootfs/host/bin/
x86_64-buildroot-linux-gnu-strip --remove-section=.comment --remove-section=.note --strip-
debug 2>/dev/null || true
test -f /home/nadim/opencn2/agency/rootfs/target/etc/ld.so.conf && \
    { echo "ERROR: we shouldn't have a /etc/ld.so.conf file"; exit 1; } || true
test -d /home/nadim/opencn2/agency/rootfs/target/etc/ld.so.conf.d && \
    { echo "ERROR: we shouldn't have a /etc/ld.so.conf.d directory"; exit 1; } || true
mkdir -p /home/nadim/opencn2/agency/rootfs/target/etc
( \
    echo "NAME=Buildroot"; \
    echo "VERSION=-g89dc816eac-dirty"; \
    echo "ID=buildroot"; \
    echo "VERSION_ID=2021.02"; \
    echo "PRETTY_NAME=\"Buildroot 2021.02\"" \
) > /home/nadim/opencn2/agency/rootfs/target/usr/lib/os-release
ln -sf ../usr/lib/os-release /home/nadim/opencn2/agency/rootfs/target/etc
>>>   Sanitizing RPATH in target tree
PER_PACKAGE_DIR=/home/nadim/opencn2/agency/rootfs/per-package /home/nadim/
opencn2/buildroot/support/scripts/fix-rpath target
>>>   Copying overlay /home/nadim/opencn2/agency/rootfs/board/common/rootfs_overlay/
[    0.000000] Linux version 5.4.44 (nadim@nadim-pc) (gcc version 11.4.0 (Ubuntu
11.4.0-1ubuntu1~22.04)) #1 SMP Tue Aug 22 16:44:20 IST 2023
[    0.000000] Command line: root=/dev/ram console=ttyS0 earlyprintk=pciserial
[    0.000000] x86/fpu: Supporting XSAVE feature 0x001: 'x87 floating point registers'
[    0.000000] x86/fpu: Supporting XSAVE feature 0x002: 'SSE registers'
```

[0.000000] x86/fpu: Supporting XSAVE feature 0x004: 'AVX registers'
[0.000000] x86/fpu: Supporting XSAVE feature 0x020: 'AVX-512 opmask'
[0.000000] x86/fpu: Supporting XSAVE feature 0x040: 'AVX-512 Hi256'
[0.000000] x86/fpu: Supporting XSAVE feature 0x080: 'AVX-512 ZMM_Hi256'
[0.000000] x86/fpu: Supporting XSAVE feature 0x200: 'Protection Keys User registers'
[0.000000] x86/fpu: xstate_offset[2]: 576, xstate_sizes[2]: 256
[0.000000] x86/fpu: xstate_offset[5]: 832, xstate_sizes[5]:   64
[0.000000] x86/fpu: xstate_offset[6]: 896, xstate_sizes[6]: 512
[0.000000] x86/fpu: xstate_offset[7]: 1408, xstate_sizes[7]: 1024
[0.000000] x86/fpu: xstate_offset[9]: 2432, xstate_sizes[9]:   8
[0.000000] x86/fpu: Enabled xstate features 0x2e7, context size is 2440 bytes, using 'compacted' format.
[0.000000] BIOS-provided physical RAM map:
[0.000000] BIOS-e820: [mem 0x0000000000000000-0x000000000009fbff] usable
[0.000000] BIOS-e820: [mem 0x000000000009fc00-0x000000000009ffff] reserved
[0.000000] BIOS-e820: [mem 0x00000000000f0000-0x00000000000fffff] reserved
[0.000000] BIOS-e820: [mem 0x0000000000100000-0x000000003ffdefff] usable
[0.000000] BIOS-e820: [mem 0x000000003ffdf000-0x000000003fffffff] reserved
[0.000000] BIOS-e820: [mem 0x00000000feffc000-0x00000000feffffff] reserved
[0.000000] BIOS-e820: [mem 0x00000000fffc0000-0x00000000ffffffff] reserved
[0.000000] printk: bootconsole [earlyser0] enabled
[0.000000] NX (Execute Disable) protection: active
[0.000000] SMBIOS 2.8 present.
[0.000000] DMI: QEMU Standard PC (i440FX + PIIX, 1996), BIOS rel-1.14.0-0-g155821a1990b-prebuilt.qemu.org 04/01/2014
[0.000000] tsc: Fast TSC calibration using PIT
[0.000000] tsc: Detected 1187.416 MHz processor
[0.210405] last_pfn = 0x3ffdf max_arch_pfn = 0x400000000
[0.211307] x86/PAT: Configuration [0-7]: WB WC UC- UC WB WP UC- WT
[0.218421] found SMP MP-table at [mem 0x000f5a70-0x000f5a7f]
[0.219228] check: Scanning 1 areas for low memory corruption
[0.220215] Using GB pages for direct mapping
[0.220964] ACPI: Early table checksum verification disabled
[0.221612] ACPI: RSDP 0x00000000000F5A30 000014 (v00 BOCHS)
[0.222368] ACPI: RSDT 0x000000003FFE13E7 000034 (v01 BOCHS BXPCRSDT 00000001 BXPC 00000001)
[0.223698] ACPI: FACP 0x000000003FFE1283 000074 (v01 BOCHS BXPCFACP 00000001 BXPC 00000001)
[0.224887] ACPI: DSDT 0x000000003FFDFDC0 0014C3 (v01 BOCHS BXPCDSDT 00000001 BXPC 00000001)
[0.226012] ACPI: FACS 0x000000003FFDFD80 000040
[0.226649] ACPI: APIC 0x000000003FFE12F7 000090 (v01 BOCHS BXPCAPIC 00000001

BXPC 00000001)

[0.228050] ACPI: HPET 0x000000003FFE1387 000038 (v01 BOCHS BXPCHPET 00000001 BXPC 00000001)

[0.229352] ACPI: WAET 0x000000003FFE13BF 000028 (v01 BOCHS BXPCWAET 00000001 BXPC 00000001)

[0.230943] Zone ranges:

[0.231300]   DMA   [mem 0x0000000000001000-0x0000000000ffffff]

[0.232129]   DMA32   [mem 0x0000000001000000-0x000000003ffdefff]

[0.232935]   Normal   empty

[0.233308] Movable zone start for each node

[0.233860] Early memory node ranges

[0.234325]   node   0: [mem 0x0000000000001000-0x000000000009efff]

[0.235115]   node   0: [mem 0x0000000000100000-0x000000003ffdefff]

[0.236502] Zeroed struct page in unavailable ranges: 131 pages

[0.236504] Initmem setup node 0 [mem 0x0000000000001000-0x000000003ffdefff]

[0.241172] ACPI: LAPIC_NMI (acpi_id[0xff] dfl dfl lint[0x1])

[0.241924] IOAPIC[0]: apic_id 0, version 17, address 0xfec00000, GSI 0-23

[0.242757] ACPI: INT_SRC_OVR (bus 0 bus_irq 0 global_irq 2 dfl dfl)

[0.243703] ACPI: INT_SRC_OVR (bus 0 bus_irq 5 global_irq 5 high level)

[0.244630] ACPI: INT_SRC_OVR (bus 0 bus_irq 9 global_irq 9 high level)

[0.245458] ACPI: INT_SRC_OVR (bus 0 bus_irq 10 global_irq 10 high level)

[0.246240] ACPI: INT_SRC_OVR (bus 0 bus_irq 11 global_irq 11 high level)

[0.247460] Using ACPI (MADT) for SMP configuration information

[0.248423] ACPI: HPET id: 0x8086a201 base: 0xfed00000

[0.249430] smpboot: Allowing 4 CPUs, 0 hotplug CPUs

[0.250335] [mem 0x40000000-0xfeffbfff] available for PCI devices

[0.251510] clocksource: refined-jiffies: mask: 0xffffffff max_cycles: 0xffffffff, max_idle_ns: 1910969940391419 ns

[0.253256] setup_percpu: NR_CPUS:4 nr_cpumask_bits:4 nr_cpu_ids:4 nr_node_ids:1

[0.255344] percpu: Embedded 52 pages/cpu s173096 r8192 d31704 u524288

[0.256772] Built 1 zonelists, mobility grouping on. Total pages: 257896

[0.257897] Kernel command line: root=/dev/ram root=/dev/ram console=ttyS0 earlyprintk=pciserial

[0.259438] Dentry cache hash table entries: 131072 (order: 8, 1048576 bytes, linear)

[0.260688] Inode-cache hash table entries: 65536 (order: 7, 524288 bytes, linear)

[0.261958] mem auto-init: stack:off, heap alloc:off, heap free:off

[0.265697] Memory: 1006612K/1048052K available (10243K kernel code, 865K rwdata, 2388K rodata, 3408K init, 1796K bss, 41440K reserved, 0K cma-reserved)

[0.268159] SLUB: HWalign=64, Order=0-3, MinObjects=0, CPUs=4, Nodes=1

[0.269487] rcu: Hierarchical RCU implementation.

[0.270129] rcu: RCU calculated value of scheduler-enlistment delay is 100 jiffies.

[0.271314] NR_IRQS: 4352, nr_irqs: 456, preallocated irqs: 16

[0.272815] random: get_random_bytes called from start_kernel+0x306/0x4a6 with crng_init=0
[0.279281] Console: colour VGA+ 80x25
[0.281087] printk: console [ttyS0] enabled
[0.281087] printk: console [ttyS0] enabled
[0.282233] printk: bootconsole [earlyser0] disabled
[0.282233] printk: bootconsole [earlyser0] disabled
[0.283526] ACPI: Core revision 20190816
[0.284042] APIC: Switch to symmetric I/O mode setup
[0.285644] clocksource: tsc-early: mask: 0xffffffffffffffff max_cycles: 0x111dac20e11, max_idle_ns: 440795259601 ns
[0.287028] Calibrating delay loop (skipped), value calculated using timer frequency.. 2374.83 BogoMIPS (lpj=1187416)
[0.288015] pid_max: default: 32768 minimum: 301
[0.288015] Mount-cache hash table entries: 2048 (order: 2, 16384 bytes, linear)
[0.288015] Mountpoint-cache hash table entries: 2048 (order: 2, 16384 bytes, linear)
[0.288015] x86/cpu: User Mode Instruction Prevention (UMIP) activated
[0.288015] Last level iTLB entries: 4KB 0, 2MB 0, 4MB 0
[0.288015] Last level dTLB entries: 4KB 0, 2MB 0, 4MB 0, 1GB 0
[0.288015] Spectre V1 : Mitigation: usercopy/swapgs barriers and __user pointer sanitization
[0.288015] Spectre V2 : Mitigation: Enhanced IBRS
[0.288015] Spectre V2 : Spectre v2 / SpectreRSB mitigation: Filling RSB on context switch
[0.288015] Spectre V2 : mitigation: Enabling conditional Indirect Branch Prediction Barrier
[0.288015] Speculative Store Bypass: Mitigation: Speculative Store Bypass disabled via prctl and seccomp
[0.288015] Freeing SMP alternatives memory: 28K
[0.288015] smpboot: CPU0: Intel(R) Core(TM) i3-1005G1 CPU @ 1.20GHz (family: 0x6, model: 0x7e, stepping: 0x5)
[0.288239] Performance Events: Icelake events, full-width counters, Intel PMU driver.
[0.289020] ... version: 2
[0.289590] ... bit width: 48
[0.290018] ... generic registers: 8
[0.290557] ... value mask: 0000ffffffffffff
[0.291023] ... max period: 00007fffffffffff
[0.291785] ... fixed-purpose events: 3
[0.292020] ... event mask: 00000007000000ff
[0.292863] rcu: Hierarchical SRCU implementation.
[0.293103] smp: Bringing up secondary CPUs ...
BOOting CPU 1
[0.294136] x86: Booting SMP configuration:
smpboot: CPU 1 Converting physical 0 to logical die 1

start_secondary: waiting on CPU 1 for starting Xenomai initialization ...
inen** cAyg enRTc yC PRUT iCPs U CPgeU ts# 1
vi[Xseinbolmea if]o rs cLhienduux.li..n
g class idl#e B OOrtiengg iCsPtUe r2e
d.[0.294765] .... node #0, CPUs: #1 #2
[0.015602] smpboot: CPU 2 Converting physical 0 to logical die 2

[Xenomai] scheduling class rt registered.
Cobalt vSOO-1.1 (SOO-xenocobalt)
BOOting CPU 3
[0.420351] #3
[0.015602] smpboot: CPU 3 Converting physical 0 to logical die 3
[0.482041] smp: Brought up 1 node, 3 CPUs
[0.482642] smpboot: Max logical packages: 4
[0.483021] smpboot: Total of 3 processors activated (7195.10 BogoMIPS)
[0.484142] devtmpfs: initialized
[0.485130] clocksource: jiffies: mask: 0xffffffff max_cycles: 0xffffffff, max_idle_ns:
1911260446275000 ns
[0.486021] futex hash table entries: 1024 (order: 4, 65536 bytes, linear)
[0.487198] NET: Registered protocol family 16
xenomai_pre_init: waiting on CPU 0 for Xenomai/Cobalt fully initialized...
[0.489519] cpuidle: using governor menu
vbus_init: initializing vbstore...
... vbstore SOO Agency setting up...
vbs_store_mkdir: creating backend entry for /backend virtual driver...
vbs_store_mkdir: creating backend entry for /device virtual driver...
vbs_store_mkdir: creating backend entry for /domain virtual driver...
vbs_store_mkdir: creating backend entry for /domain/gnttab virtual driver...
vbs_store_mkdir: creating backend entry for /domain/gnttab/0 virtual driver...
vbs_store_mkdir: creating backend entry for /domain/gnttab/1 virtual driver...
vbs_store_mkdir: creating backend entry for /domain/gnttab/2 virtual driver...
vbs_store_mkdir: creating backend entry for /domain/gnttab/3 virtual driver...
vbs_store_mkdir: creating backend entry for /domain/gnttab/4 virtual driver...
vbs_store_mkdir: creating backend entry for /domain/gnttab/5 virtual driver...
vbs_store_mkdir: creating backend entry for /domain/gnttab/6 virtual driver...
vbs_store_mkdir: creating backend entry for /soo virtual driver...
vbs_store_mkdir: creating backend entry for /soo/directcomm virtual driver...
vbs_store_mkdir: creating backend entry for /soo/directcomm/0 virtual driver...
vbs_store_mkdir: creating backend entry for /soo/directcomm/1 virtual driver...
vbs_store_mkdir: creating backend entry for /soo/directcomm/2 virtual driver...
vbs_store_mkdir: creating backend entry for /soo/directcomm/3 virtual driver...
vbs_store_mkdir: creating backend entry for /soo/directcomm/4 virtual driver...

vbs_store_mkdir: creating backend entry for /soo/directcomm/5 virtual driver...
vbs_store_mkdir: creating backend entry for /soo/directcomm/6 virtual driver...
vbus_vbstore_init: done.
[0.506569] ACPI: bus type PCI registered
[0.507068] PCI: Using configuration type 1 for base access
[0.510530] HugeTLB registered 2.00 MiB page size, pre-allocated 0 pages
OpenCN: core subsystem initialization.
RTAPI: Init
RTAPI: Init complete
[0.513873] OpenCN: halcmd_init streamer subsystem initialization.
[0.514051] ACPI: Added _OSI(Module Device)
[0.514607] ACPI: Added _OSI(Processor Device)
[0.515019] ACPI: Added _OSI(3.0 _SCP Extensions)
[0.515597] ACPI: Added _OSI(Processor Aggregator Device)
[0.516021] ACPI: Added _OSI(Linux-Dell-Video)
[0.516605] ACPI: Added _OSI(Linux-Lenovo-NV-HDMI-Audio)
[0.517020] ACPI: Added _OSI(Linux-HPI-Hybrid-Graphics)
[0.518053] ACPI: 1 ACPI AML tables successfully acquired and loaded
[0.519944] ACPI: Interpreter enabled
[0.520032] ACPI: (supports S0 S5)
[0.520576] ACPI: Using IOAPIC for interrupt routing
[0.521036] PCI: Using host bridge windows from ACPI; if necessary, use "pci=nocrs" and
report a bug
[0.522095] ACPI: Enabled 2 GPEs in block 00 to 0F
[0.523995] ACPI: PCI Root Bridge [PCI0] (domain 0000 [bus 00-ff])
[0.524028] acpi PNP0A03:00: _OSC: OS supports [ASPM ClockPM Segments MSI HPX-
Type3]
[0.524798] PCI host bridge to bus 0000:00
[0.525025] pci_bus 0000:00: root bus resource [io 0x0000-0x0cf7 window]
[0.525953] pci_bus 0000:00: root bus resource [io 0x0d00-0xffff window]
[0.526025] pci_bus 0000:00: root bus resource [mem 0x000a0000-0x000bffff window]
[0.527024] pci_bus 0000:00: root bus resource [mem 0x40000000-0xfebfffff window]
[0.528022] pci_bus 0000:00: root bus resource [mem 0x100000000-0x17fffffff window]
[0.529022] pci_bus 0000:00: root bus resource [bus 00-ff]
[0.529977] pci 0000:00:00.0: [8086:1237] type 00 class 0x060000
[0.530460] pci 0000:00:01.0: [8086:7000] type 00 class 0x060100
[0.531469] pci 0000:00:01.1: [8086:7010] type 00 class 0x010180
[0.533929] pci 0000:00:01.1: reg 0x20: [io 0xc020-0xc02f]
[0.534492] pci 0000:00:01.1: legacy IDE quirk: reg 0x10: [io 0x01f0-0x01f7]
[0.535020] pci 0000:00:01.1: legacy IDE quirk: reg 0x14: [io 0x03f6]
[0.535822] pci 0000:00:01.1: legacy IDE quirk: reg 0x18: [io 0x0170-0x0177]
[0.536019] pci 0000:00:01.1: legacy IDE quirk: reg 0x1c: [io 0x0376]

[0.537004] pci 0000:00:01.3: [8086:7113] type 00 class 0x068000
[0.537317] pci 0000:00:01.3: quirk: [io 0x0600-0x063f] claimed by PIIX4 ACPI
[0.538026] pci 0000:00:01.3: quirk: [io 0x0700-0x070f] claimed by PIIX4 SMB
[0.539101] pci 0000:00:02.0: [1234:1111] type 00 class 0x030000
[0.540837] pci 0000:00:02.0: reg 0x10: [mem 0xfd000000-0xfdffffff pref]
[0.542449] pci 0000:00:02.0: reg 0x18: [mem 0xfebd4000-0xfebd4fff]
[0.546060] pci 0000:00:02.0: reg 0x30: [mem 0xfebc0000-0xfebcffff pref]
[0.547241] pci 0000:00:03.0: [8086:10d3] type 00 class 0x020000
[0.549020] pci 0000:00:03.0: reg 0x10: [mem 0xfeb80000-0xfeb9ffff]
[0.550809] pci 0000:00:03.0: reg 0x14: [mem 0xfeba0000-0xfebbffff]
[0.551749] pci 0000:00:03.0: reg 0x18: [io 0xc000-0xc01f]
[0.552777] pci 0000:00:03.0: reg 0x1c: [mem 0xfebd0000-0xfebd3fff]
[0.555897] pci 0000:00:03.0: reg 0x30: [mem 0xfeb40000-0xfeb7ffff pref]
[0.556712] ACPI: PCI Interrupt Link [LNKA] (IRQs 5 *10 11)
[0.557103] ACPI: PCI Interrupt Link [LNKB] (IRQs 5 *10 11)
[0.557853] ACPI: PCI Interrupt Link [LNKC] (IRQs 5 10 *11)
[0.558080] ACPI: PCI Interrupt Link [LNKD] (IRQs 5 10 *11)
[0.558782] ACPI: PCI Interrupt Link [LNKS] (IRQs *9)
[0.560706] APIC: NR_CPUS/possible_cpus limit of 4 reached. Processor 4/0x1 ignored.
[0.561160] ACPI: Unable to map lapic to logical cpu number
[0.562586] pci 0000:00:02.0: vgaarb: setting as boot VGA device
[0.563015] pci 0000:00:02.0: vgaarb: VGA device added: decodes=io+mem,owns=io+mem,locks=none
[0.563025] pci 0000:00:02.0: vgaarb: bridge control possible
[0.563690] vgaarb: loaded
[0.564110] SCSI subsystem initialized
[0.564903] ACPI: bus type USB registered
[0.565050] usbcore: registered new interface driver usbfs
[0.565816] usbcore: registered new interface driver hub
[0.566027] usbcore: registered new device driver usb
[0.566771] pps_core: LinuxPPS API ver. 1 registered
[0.567019] pps_core: Software ver. 5.3.6 - Copyright 2005-2007 Rodolfo Giometti <giometti@linux.it>
[0.568021] PTP clock support registered
[0.568515] EDAC MC: Ver: 3.0.0
[0.569347] PCI: Using ACPI for IRQ routing
EtherCAT: Master driver 1.5.2 REV
EtherCAT: 1 master waiting for devices.
[0.571414] clocksource: Switched to clocksource tsc-early
[0.575200] pnp: PnP ACPI init
[0.575938] pnp: PnP ACPI: found 6 devices
[0.577536] thermal_sys: Registered thermal governor 'step_wise'

[0.577537] thermal_sys: Registered thermal governor 'user_space'

[0.578448] pci_bus 0000:00: resource 4 [io 0x0000-0x0cf7 window]

[0.580186] pci_bus 0000:00: resource 5 [io 0x0d00-0xffff window]

[0.580968] pci_bus 0000:00: resource 6 [mem 0x000a0000-0x000bffff window]

[0.581805] pci_bus 0000:00: resource 7 [mem 0x40000000-0xfebfffff window]

[0.582667] pci_bus 0000:00: resource 8 [mem 0x100000000-0x17fffffff window]

[0.583656] NET: Registered protocol family 2

[0.584944] tcp_listen_portaddr_hash hash table entries: 512 (order: 2, 20480 bytes, linear)

[0.586104] TCP established hash table entries: 8192 (order: 4, 65536 bytes, linear)

[0.587158] TCP bind hash table entries: 8192 (order: 6, 262144 bytes, linear)

[0.588152] TCP: Hash tables configured (established 8192 bind 8192)

[0.589057] UDP hash table entries: 512 (order: 3, 49152 bytes, linear)

[0.589881] UDP-Lite hash table entries: 512 (order: 3, 49152 bytes, linear)

[0.590863] NET: Registered protocol family 1

[0.591444] pci 0000:00:01.0: PIIX3: Enabling Passive Release

[0.592148] pci 0000:00:00.0: Limiting direct PCI/PCI transfers

[0.592826] pci 0000:00:01.0: Activating ISA DMA hang workarounds

[0.593739] pci 0000:00:02.0: Video device with shadowed ROM at [mem 0x000c0000-0x000dffff]

[0.595284] PCI: CLS 0 bytes, default 64

[0.627471] RAPL PMU: API unit is 2^-32 Joules, 0 fixed counters, 10737418240 ms ovfl timer

[0.629081] check: Scanning for low memory corruption every 60 seconds

[0.630296] workingset: timestamp_bits=62 max_order=18 bucket_order=0

[0.638679] Key type asymmetric registered

[0.639271] Asymmetric key parser 'x509' registered

[0.639937] io scheduler mq-deadline registered

[0.640565] io scheduler kyber registered

HAL_LIB: loading kernel lib

RTAPI: initing comp HAL_LIB

RTAPI: comp 'HAL_LIB' loaded, ID: 1

RTAPI: shmem 01 created by comp 01, key: 0x48414c32, size: 348160

HAL_LIB: kernel lib installed successfully

[0.643565] Warning: Processor Platform Limit event detected, but not handled.

[0.644541] Consider compiling CPUfreq support into your kernel.

[0.645750] Serial: 8250/16550 driver, 4 ports, IRQ sharing enabled

[0.669165] 00:04: ttyS0 at I/O 0x3f8 (irq = 4, base_baud = 115200) is a 16550A

[0.670573] Non-volatile memory driver v1.3

[0.671214] Linux agpgart interface v0.103

[0.671930] bochs-drm 0000:00:02.0: remove_conflicting_pci_framebuffers: bar 0: 0xfd000000 -> 0xfdffffff

[0.673377] bochs-drm 0000:00:02.0: remove_conflicting_pci_framebuffers: bar 2:

0xfebd4000 -> 0xfebd4fff
[0.674689] bochs-drm 0000:00:02.0: vgaarb: deactivate vga console
[0.681032] Console: switching to colour dummy device 80x25
[0.682004] [drm] Found bochs VGA, ID 0xb0c0.
[0.682005] [drm] Framebuffer size 16384 kB @ 0xfd000000, mmio @ 0xfebd4000.
[0.683570] [TTM] Zone kernel: Available graphics memory: 503320 KiB
[0.684408] [TTM] Initializing pool allocator
[0.684986] [TTM] Initializing DMA pool allocator
[0.686500] [drm] Found EDID data blob.
[0.687119] [drm] Initialized bochs-drm 1.0.0 20130925 for 0000:00:02.0 on minor 0
[0.688557] fbcon: bochs-drmdrmfb (fb0) is primary device
[0.691684] Console: switching to colour frame buffer device 128x48
[0.694506] bochs-drm 0000:00:02.0: fb0: bochs-drmdrmfb frame buffer device
[0.696656] loop: module loaded
[0.698067] scsi host0: ata_piix
[0.698571] scsi host1: ata_piix
[0.698983] ata1: PATA max MWDMA2 cmd 0x1f0 ctl 0x3f6 bmdma 0xc020 irq 14
[0.699884] ata2: PATA max MWDMA2 cmd 0x170 ctl 0x376 bmdma 0xc028 irq 15
[0.700776] e1000e: Intel(R) PRO/1000 Network Driver - 3.2.6-k
[0.701560] e1000e: Copyright(c) 1999 - 2015 Intel Corporation.
[0.721408] PCI Interrupt Link [LNKC] enabled at IRQ 11
[0.722806] e1000e 0000:00:03.0: Interrupt Throttling Rate (ints/sec) set to dynamic
conservative mode
[0.764566] e1000e 0000:00:03.0 0000:00:03.0 (uninitialized): registered PHC clock
[0.814812] e1000e 0000:00:03.0 eth0: (PCI Express:2.5GT/s:Width x1) 00:01:29:53:97:ba
[0.817447] e1000e 0000:00:03.0 eth0: Intel(R) PRO/1000 Network Connection
[0.819828] e1000e 0000:00:03.0 eth0: MAC: 3, PHY: 8, PBA No: 000000-000
[0.822429] ehci_hcd: USB 2.0 'Enhanced' Host Controller (EHCI) Driver
[0.824671] ehci-pci: EHCI PCI platform driver
[0.826205] ohci_hcd: USB 1.1 'Open' Host Controller (OHCI) Driver
[0.828198] ohci-pci: OHCI PCI platform driver
[0.829761] uhci_hcd: USB Universal Host Controller Interface driver
[0.831771] usbcore: registered new interface driver usblp
[0.833550] usbcore: registered new interface driver usb-storage
[0.835584] i8042: PNP: PS/2 Controller [PNP0303:KBD,PNP0f13:MOU] at 0x60,0x64 irq
1,12
[0.839258] serio: i8042 KBD port at 0x60,0x64 irq 1
[0.840851] serio: i8042 AUX port at 0x60,0x64 irq 12
[0.842843] mousedev: PS/2 mouse device common for all mice
[0.844754] rtc_cmos 00:05: RTC can wake from S4
[0.846742] rtc_cmos 00:05: registered as rtc0
[0.848368] rtc_cmos 00:05: alarms up to one day, y3k, 242 bytes nvram

[0.850854] device-mapper: ioctl: 4.41.0-ioctl (2019-09-16) initialised: dm-devel@redhat.com
[0.853179] hidraw: raw HID events driver (C) Jiri Kosina
[0.854907] usbcore: registered new interface driver usbhid
[0.856180] usbhid: USB HID core driver
[0.856996] IPVS: Registered protocols ()
[0.857716] input: AT Translated Set 2 keyboard as /devices/platform/i8042/serio0/input/input0
[0.859220] IPVS: Connection hash table configured (size=4096, memory=64Kbytes)
[0.860273] IPVS: ipvs loaded.
[0.860940] NET: Registered protocol family 10
[0.861746] Segment Routing with IPv6
[0.862791] NET: Registered protocol family 17
[0.864074] Bridge firewalling registered
[0.865704] IPI shorthand broadcast: enabled
[0.866542] sched_clock: Marking stable (851895347, 14602024)->(967071346, -100573975)
[0.868215] OpenCN: loopback subsystem initialization.
[0.869052] OpenCN: streamer subsystem initialization.
[0.869896] OpenCN: sampler subsystem initialization.
[0.870789] OpenCN: threads subsystem initialization.
[0.871576] OpenCN: lcec subsystem initialization.
[0.872370] OpenCN: lcct subsystem initialization.
[0.873184] OpenCN: lcct subsystem initialized
[0.873928] OpenCN: feedopt subsystem initialization.
[0.874604] OpenCN: plc subsystem initialization.
[0.875295] OpenCN: simple_pg subsystem initialization.
[0.876038] OpenCN: mux subsystem initialization.
[0.876682] OpenCN: kinematic subsystem initialization.
[0.877482] OpenCN: ocno subsystem initialization.
[0.907785] ata2.00: ATAPI: QEMU DVD-ROM, 2.5+, max UDMA/100
[0.909683] ata1.00: ATA-7: QEMU HARDDISK, 2.5+, max UDMA/100
[0.911276] ata1.00: 16777216 sectors, multi 16: LBA48
[0.914065] scsi 0:0:0:0: Direct-Access   ATA   QEMU HARDDISK   2.5+ PQ: 0 ANSI: 5
[0.916656] sd 0:0:0:0: [sda] 16777216 512-byte logical blocks: (8.59 GB/8.00 GiB)
[0.918531] sd 0:0:0:0: [sda] Write Protect is off
[0.919586] sd 0:0:0:0: Attached scsi generic sg0 type 0
[0.921125] sd 0:0:0:0: [sda] Write cache: enabled, read cache: enabled, doesn't support DPO or FUA
[0.923275] scsi 1:0:0:0: CD-ROM   QEMU   QEMU DVD-ROM   2.5+ PQ: 0 ANSI: 5
[0.925099] sda: sda1
[0.925559] sd 0:0:0:0: [sda] Attached SCSI disk
[0.940330] sr 1:0:0:0: [sr0] scsi3-mmc drive: 4x/4x cd/rw xa/form2 tray

```
[    0.943028] cdrom: Uniform CD-ROM driver Revision: 3.20
[    0.945394] sr 1:0:0:0: Attached scsi generic sg1 type 5
[    0.948890] Freeing unused kernel image memory: 3408K
[    0.950856] This architecture does not have kernel memory protection.
[    0.953140] Run /init as init process
SOO Agency last initialization part processing now...
sooenv_init: starting SOO environment...
OpenCN initrd filesystem - now executing init from initramfs
RT Agency ready
[    0.962600] Low frequency thread...
[    1.724088] clocksource: tsc: mask: 0xffffffffffffffff max_cycles: 0x111dac20e11,
max_idle_ns: 440795259601 ns
[    1.727844] clocksource: Switched to clocksource tsc
[    3.181441] EXT4-fs (sda1): mounted filesystem with ordered data mode. Opts: (null)
[    3.204101] EXT4-fs (sda1): re-mounted. Opts: (null)
/etc/init.d/rcS: line 23: /etc/init.d/S01logging: Permission denied
Starting syslogd: OK
Starting klogd: OK
Running sysctl: OK
Initializing random number generator... [    3.225633] random: dd: uninitialized urandom
read (512 bytes read)
done.
Starting network: OK
[    3.309703] random: avahi-daemon: uninitialized urandom read (4 bytes read)
[    3.311421] random: avahi-daemon: uninitialized urandom read (4 bytes read)
Creating OpenCN dev... mkdir: can't create directory '/dev/opencn': File exists
OK
Logging into file (opencn debug)... -- logfile utility --

Enabling RT logging in the file /root/opencn.log

OpenCN logging into /root/opencn.log ...
OpenCN: enabling in-kernel logging...
starting OpenCN... OK
ssh-keygen: generating new host keys: RSA DSA ECDSA ED25519
Starting sshd: OK

opencn ~ # [    6.015798] e1000e: eth0 NIC Link is Up 1000 Mbps Full Duplex, Flow Control:
Rx/Tx
[    6.018860] IPv6: ADDRCONF(NETDEV_CHANGE): eth0: link becomes ready

opencn ~ # ls
```

```
SetPoints_fast.txt    lcct*              one-drive.xml
cmctl-server*         lcec*              opencn-m5-server*
cmd.hal               logfile*           opencn-server*
cmd_float.hal         loopback*          plc*
cmds/                 micro3.hal         rate.hal
el3702_example.hal    micro3.xml         sampler*
el3702_example.xml    micro5/            setpoints/
ethercat*             mux*               simple_pg*
example/              ocno*              start_opencn.sh*
feedopt*              ocno_dbg.hal       streamer*
gcode/                ocno_test.sh*      test_input.txt
halcmd*               one-drive-feedopt.hal  threads*
header.txt            one-drive-sampler.hal  timing_tests*
kinematic*            one-drive.hal
opencn ~ # ifconfig
eth0    Link encap:Ethernet  HWaddr 00:01:29:53:97:BA
        inet addr:192.168.53.15  Bcast:192.168.53.255  Mask:255.255.255.0
        inet6 addr: fe80::201:29ff:fe53:97ba/64 Scope:Link
        UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
        RX packets:63 errors:0 dropped:0 overruns:0 frame:0
        TX packets:31 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:9677 (9.4 KiB)  TX bytes:27595 (26.9 KiB)
        Interrupt:11 Memory:feb80000-feba0000

lo      Link encap:Local Loopback
        inet addr:127.0.0.1  Mask:255.0.0.0
        inet6 addr: ::1/128 Scope:Host
        UP LOOPBACK RUNNING  MTU:65536  Metric:1
        RX packets:14 errors:0 dropped:0 overruns:0 frame:0
        TX packets:14 errors:0 dropped:0 overruns:0 carrier:0
        collisions:0 txqueuelen:1000
        RX bytes:2763 (2.6 KiB)  TX bytes:2763 (2.6 KiB)

opencn ~ #
```