

Собираем ядро Linux для ARM

1. Установим qemu

```
sudo apt install qemu-system
```

2. Установим компилятор

```
sudo apt install gcc-11-arm-linux-gnueabi
```

3. Создаем дефолтный конфиг

```
ARCH=arm make defconfig
```

4. Собираем

```
ARCH=arm CROSS_COMPILE=arm-linux-gnueabi- make -j 16 zImage
```

5. Генерируем .dtb файл

```
ARCH=arm make dtbs
```

6. Запускаем в qemu

```
QEMU_AUDIO_DRV=none qemu-system-arm -M vexpress-a9 -kernel zImage  
-dtb vexpress-v2p-ca9.dtb -append "console=ttyAMA0" -nographic
```

```
[ 2.667989] Kernel panic - not syncing: VFS: Unable to mount root fs on unknown-block(0,0)
[ 2.673170] CPU: 0 UID: 0 PID: 1 Comm: swapper/0 Not tainted 6.16.7my #1 NONE
[ 2.673606] Hardware name: ARM-Versatile Express
[ 2.673902] Call trace:
[ 2.674342] unwind_backtrace from show_stack+0x10/0x14
[ 2.675304] show_stack from dump_stack_lvl+0x54/0x68
[ 2.675503] dump_stack_lvl from panic+0x10c/0x36c
[ 2.675799] panic from mount_root_generic+0x1f8/0x2a8
[ 2.676079] mount_root_generic from prepare_namespace+0x1f8/0x250
[ 2.676308] prepare_namespace from kernel_init+0x1c/0x12c
[ 2.676508] kernel_init from ret_from_fork+0x14/0x28
[ 2.676762] Exception stack(0xc8825fb0 to 0xc8825ff8)
[ 2.677095] 5fa0: 00000000 00000000 00000000 00000000
[ 2.677386] 5fc0: 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000
[ 2.677670] 5fe0: 00000000 00000000 00000000 00000000 00000013 00000000
[ 2.678555] ---[ end Kernel panic - not syncing: VFS: Unable to mount root fs on unknown-block(0,0) ]---
```

```
kravchan@kravchan:/usr/src/TMP$ QEMU_AUDIO_DRV=none qemu-system-arm -M vexpress-a9 -kernel zImage -dtb vexpress-v2p-ca9.dtb -nographic
[ 0.000000] Booting Linux on physical CPU 0x0
[ 0.000000] Linux version 6.16.7my (kravchan@kravchan) (arm-linux-gnueabi-gcc (Ubuntu 14.2.0-19ubuntu1) 14.2.0)
SMP Thu Sep 18 16:49:34 +07 2025
```