Audio & Webcam Installation Guide for EM2440-III

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Last Modify: 2011-11-30

This document guides the user through:
   1. Getting the Audio Installed
   2. Getting the Microphone Installed
   3. Getting the Webcam Installed

Formatting:
1. Commands starting with > are Linux console commands:
   > echo "Hello world!"
2. Commands starting with uboot> are U-Boot console commands:
   uboot> printenv
3. Almost all commands are case sensitive in Linux and U-Boot.
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Audio Driver Setup

1. Install Driver

1.1 Configure the kernel's makefile using its configuration menu:

   1. use menuconfig to enable the driver
      - Launch the menuconfig tools
        > make menuconfig
        
        [matthew@matthew-ubuntu ~] /private/linux-2.6.30.4
        > make menuconfig
        
        - Go to
          -> “Device Driver”
-> "Sound Card Support"

-> "Advanced Linux Sound Architecture"
- Enable the "Soc Audio for the Samsung S3C24XX chips"

  and "SoC I2S Audio support Wm8731 wired to a S3C2440"
2. build zImage
   > make zImage
3. copy zImage to the share directory
   > cp $HOME/cmpt433/private/Linux-2.6.30.4/arch/arm/boot/zImage $HOME/cmpt433/public/
4. on the Target, enter uboot, and download the zImage
   uboot> tftpboot 0x30008000 ${TFTP_ROOT}/zImage
   uboot> nand erase kernel; nand write.jffs2 0x30008000 kernel ${filesize}

2. Testing the Audio Driver

2.1 Testing the speaker

0. plugin speaker to the speaker port (labelled with green)

1. on the Target make sure dsp exist
   > ls /dev/dsp

2. Launch madplay to play audio (Step 1 must be done before this step)
   > madplay test.mp3

2.2 Testing the Microphone Driver
0. Plug in microphone to the mic port (labelled with red)

1. cat the microphone driver
   
   > cat /dev/dsp

2. talk to the microphone, and now, you should be able to hear yourself from the speaker

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**Webcam Setup**

1. **Install Driver**

1.1 **Configure the kernel's makefile using its configuration menu:**

   1. use menuconfig to enable the driver
      
      - Launch the menuconfig tools
      - > make menuconfig
      - Go to

      -> **“Device Driver”**

      ![Device Drivers Menu](image)

      >"Multimedia Devices"
Enable "video For Linux" and "Enable Video For Linux API 1"

Go to

-> "Video capture adapters"

Enable "AutoSelect Pertinent encoders/decoders and other helper chips"
Go to
-> "V4L USB devices"

Enable "UVC input events device support"

note: match the driver for your webcam and the list, enable the one matches
- Press the right arrow key to exit button and exit menuconfig. Make sure you have the file.

2. build zImage
   > make zImage

3. copy zImage to the share directory
   > cp $HOME/cmpt433/private/Linux-2.6.30.4/arch/arm/boot/zImage $HOME/cmpt433/public/

4. on the Target, enter uboot, and download the zImage
   uboot> tftpboot 0x30008000 $(TFTP_ROOT)/zImage
   uboot> nand erase kernel; nand write.jffs2 0x30008000 kernel ${filesize}
2. Testing the Webcam

2.1 Find the webcam driver in the target

0. plugin Webcam to the USB port
   *note: make sure plug in the bottom of the USB port, the top USB is typeA and Bottom of the USB is type hostUSB, the Webcam only works in the hostUSB*

1. on the Target make sure video1 exist
   > ls /dev/video1
   *note: if video1 does not exist, the webcam driver you installed is not correct, repeat step 1 to find the correct webcam driver*

2.2 Testing the webcam driver in the target

0. find the ipaddress of the target
   > ifconfig

1. on the target: Launch uvc stream to test the camera capture
   > uvc_stream -d /dev/video1
   *note: now the LED on the webcam is should turn on, indicates the webcam is recording*

2. on the host: launch firefox go to:
   <IPADDRESS>:8080
   *note: replace <IPADDRESS> with your target’s IP address*
   - and now you should able to stream video though the web from the webcam that plug in to the target