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beagleboard.org®

Training BeagleBoards

with Jason Kridner

Webinar 02 -
BeagleBone for Linux Users

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BeagleBoard.org Foundation

Your DEVELOPMENT DISTRIBUTOR

Webinar Series

BeagleBone Webinar Series

Date	Time (UTC)	Topic
~~10th May~~	~~11:00 (CT) / 17:00 (UK)~~	~~Introduction to BeagleBone~~
24th May	11:00 (CT) / 17:00 (UK)	BeagleBone for Linux Users
6th June	11:00 (CT) / 17:00 (UK)	BeagleBone for Embedded Developers
21th June	11:00 (CT) / 17:00 (UK)	BeagleBone for Web Developers
12th July	11:00 (CT) / 17:00 (UK)	BeagleBone Blue for Robotics
26th July	11:00 (CT) / 17:00 (UK)	BeagleBone in the Classroom

Today's Topics

- Topics
  - Which Linux distros are available for BeagleBone and which is preferred?
  - Reflection on binary-based vs. source-based distros
  - Benefits of running Linux from eMMC or SD Card
  - Which programming languages are available
  - Linux device drivers for BeagleBone peripherals
  - Pinmuxing, Device Trees and Boot Process
- Q&A
  - Posted Questions
  - Questions from chat

Accompanying Video

- Again, this week's demo is available for viewing post-webinar:
  - https://youtu.be/jvgDwkkKtBA
  - Slides: https://cm.e-ale.org/2018/pocketbeagle/pocketbeagle.pdf
- This week's accompanying Demo video will cover:
  - Installing Debian
  - Interacting with GPIO in Debian
  - Interacting with PRUs in Debian
  - Diving deeper into Linux

Which Linux Distros are available for BeagleBone and which is preferred?

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ubuntu

debian

gentoo linux™

yocto PROJECT

Ångström

Reflection on binary-based vs. source-based distros

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ubuntu

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Running Linux from eMMC or SD Card

- eMMC benefits
  - Guaranteed quality (performance and longevity)
  - 8-bit vs. 4-bit
  - Programmed for out-of-box experience
- SD Card benefits
  - Easily swapped out
  - Removal for backup
  - Additional capacity options

Available programming languages

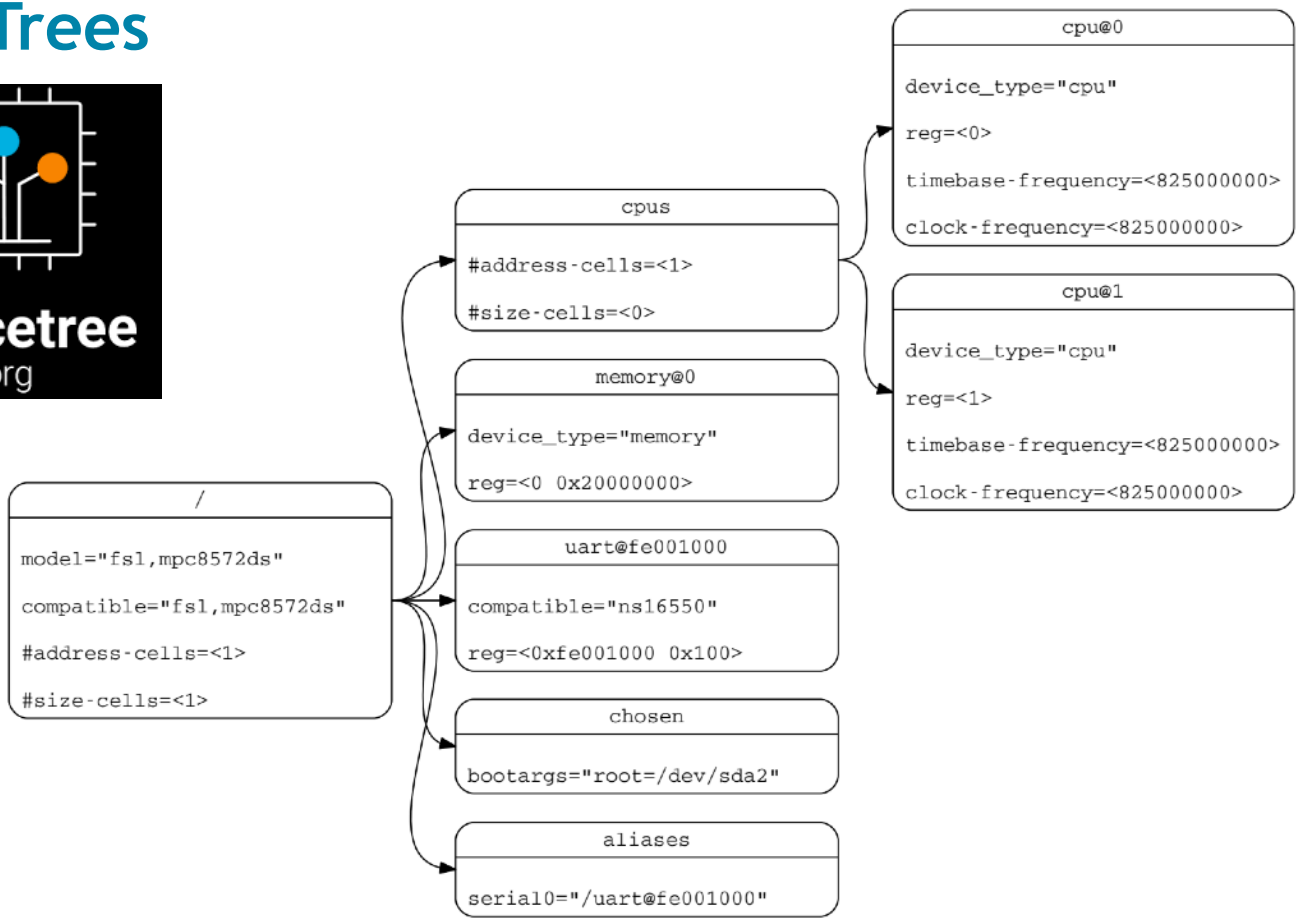
Programming Peripherals

- /sys/class/gpio
- /sys/class/leds
- /dev/spidevX.X
- /dev/i2cX
- /dev/ttySX
- /sys/bus/iio/...

Pinmux Configuration

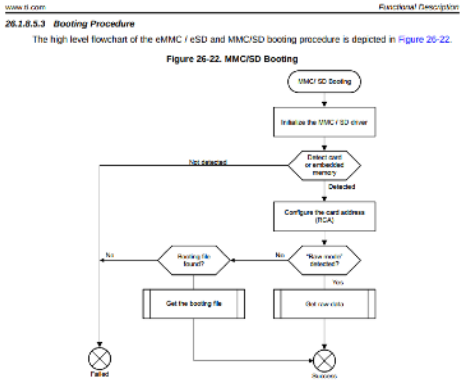
- config-pin
  - config-pin -i p1.36
  - config-pin -q p1.36
  - config-pin p1.36 pruout
- perl /opt/scripts/device/bone/show-pins.pl
- dev.ti.com/pinmux

Device Trees



Boot Process

- Kernel, command-line arguments, device tree and root file system


www.ti.com Functional Description

26.1.8.5.3 Booting Procedure

The high level flowchart of the eMMC / eSD and MMC/SD booting procedure is depicted in Figure 26-22.

Figure 26-22. MMC/SD Booting

Configure DDR

/boot/uEnv.txt
Reads EEPROMs
Processes device tree overlays

Questions posted on the element14.com Community

- Communicating with EEPROM(s) via i2c (for cape identification)
- How do you interface with the GPIO within Linux?
- How do you control the Pin Mapping on the GPIO?
- With the boards without HDMI, how do I get a graphical interface on my Linux device?
- Why did the main Distro for BeagleBone change to Debian.

Questions from the Webinar Chat.

Next Webinar Dates

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Other Resources

www.beagleboard.org

www.element14.com/beagleboard