Devicetree BOF

ELC 2016
San Diego, California

Frank Rowand, Sony

April 4, 2016
Agenda

- questions, comments, issues, concerns from the crowd
- Plumbers 2016
- Plumbers 2015
- Devicetree Specification: Grant Likely
- debug tools
- Dynamic devicetree, etc: Pantelis Antoniou
- Odds and Ends
What do you want to talk about?

- questions
- comments
- issues
- concerns
Plumbers 2016
Santa Fe, NM
November 2 - 4
with: Linux Kernel Summit, Oct 31 - Nov 1

Devicetree session proposed:
  http://wiki.linuxplumbersconf.org/2016:device_tree
  To add topics, email frowand.list@gmail.com

https://www.linuxplumbersconf.org/2016/
Plumbers 2015

Binding document and device tree source validation

Some momentum going into Plumbers 2015, currently stalled

dtc compiler

Overlays

  Pantelis Antoniou

Probe ordering

  Continues to be debated from time to time on lkml

http://elinux.org/Device_tree_future
https://etherpad.openstack.org/p/LPC2015_Device_Tree
Devicetree Specification

Grant Likely

http://connect.linaro.org/resource/bkk16/bkk16-411/
Debug Tools

scripts/dtc/dtx_diff
- diff .dts, .dtb, /proc/device-tree/
- In 4.6 merge window

dtc: dts source location annotation
- Provide source locations from .dts & .dtsi
- Several proof of concept versions on devicetree-compiler list
- Stalled, awaiting some of Frank's bandwidth
Debug Tools

scripts/dtc/dt_to_config
- Report drivers and kernel config needed by a device tree
- Plan to submit to mail list “any day now”

scripts/dt_conf
- Report difference between property accesses on target and properties in device tree
- Plan to submit to mail list “any day now”
Debug Tools

dt_node_info
- Provide info about device tree nodes from /proc/device-tree files
- proof of concept on elinux.org
- Stalled, awaiting some of Frank's bandwidth
source location annotation

----- short format -----

sdhci@f9824900 { /* qcom-apq8074-dragonboard.dts:14 */
  compatible = "qcom,sdhci-msm-v4"; /* qcom-msm8974.dtsi:240 */
  reg = <0xf9824900 0x11c 0xf9824000 0x800>; /* qcom-msm8974.dtsi:241 */
  reg-names = "hc_mem", "core_mem"; /* qcom-msm8974.dtsi:242 */
  interrupts = <0x0 0x7b 0x0 0x0 0x8a 0x0>; /* qcom-msm8974.dtsi:243 */
  interrupt-names = "hc_irq", "pwr_irq"; /* qcom-msm8974.dtsi:244 */
  clocks = <0xd 0xd8 0xd 0xd7>; /* qcom-msm8974.dtsi:245 */
  clock-names = "core", "iface"; /* qcom-msm8974.dtsi:246 */
  status = "ok"; /* qcom-apq8074-dragonboard.dts:17 */
  bus-width = <0x8>; /* qcom-apq8074-dragonboard.dts:15 */
  non-removable; /* qcom-apq8074-dragonboard.dts:16 */
}; /* qcom-apq8074-dragonboard.dts:18 */
source location annotation

-----  long format  -----  

sdhci@f9824900 { /* qcom-apq8074-dragonboard.dts:14.3-18.5 */
  compatible = "qcom,sdhci-msm-v4"; /* qcom-msm8974.dtsi:240.4-37 */
  reg = <0xf9824900 0x11c 0xf9824000 0x800>; /* qcom-msm8974.dtsi:241.4-49 */
  reg-names = "hc_mem", "core_mem"; /* qcom-msm8974.dtsi:242.4-37 */
  interrupts = <0x0 0x7b 0x0 0x0 0x8a 0x0>; /* qcom-msm8974.dtsi:243.4-38 */
  interrupt-names = "hc_irq", "pwr_irq"; /* qcom-msm8974.dtsi:244.4-42 */
  clocks = <0xd 0xd8 0xd 0xd7>; /* qcom-msm8974.dtsi:245.4-36 */
  clock-names = "core", "iface"; /* qcom-msm8974.dtsi:246.4-34 */
  status = "ok"; /* qcom-apq8074-dragonboard.dts:17.4-18 */
  bus-width = <0x8>; /* qcom-apq8074-dragonboard.dts:15.4-20 */
  non-removable; /* qcom-apq8074-dragonboard.dts:16.4-18 */
}; /* qcom-apq8074-dragonboard.dts:14.3-18.5 */
dt_to_config example snippet

$ dt_to_config --include-suspect --config=.config arch/arm/boot/dts/qcom-apq8074-dragonboard.dts


Md-c-------y : power-controller@f9089000 : qcom,msm8974-saw2-v2.1-cpu : drivers/soc/qcom/spm.c : CONFIG_QCOM_PM : y
M-------N-- : power-controller@f9089000 : qcom,saw2 : no_driver : no_config : none

-d-c-------y : coincell@2800 : qcom,pm8941-coincell : drivers/misc/qcom-coincell.c : CONFIG_QCOM_COINCELL : y

-dDc-------y : timer : arm,armv7-timer : arch/arm/kernel/vdso.c : CONFIG_VDSO : y
-dDc-------y : timer : arm,armv7-timer : drivers/clocksource/arm_arch_timer.c : CONFIG_ARM_ARCH_TIMER : y
dt_prop example snippets

$ dt_prop --td dmesg_4.5-rc5_160307_2100 qcom-apq8074-dragonboard.dts

# --- dmesg_4.5-rc5_160307_2100
# +++ qcom-apq8074-dragonboard.dts
/dts-v1/;

/ {
    #address-cells;
    -   #interrupt-cells;
    #size-cells;
    compatible;
    -   dma-coherent;
    -   dma-ranges;
    interrupt-parent;
    +   model;
    -   serial-number;

    aliases {
        -   compatible;
        +   serial0;
        +   usid0;
        +   usid4;
    }
};
dt_prop example snippets

```
$ dt_prop --td dmesg_4.5-rc5_160307_2100 qcom-apq8074-dragonboard.dts

# --- dmesg_4.5-rc5_160307_2100
# +++ qcom-apq8074-dragonboard.dts
/dts-v1/;

// ***** i2c@f9964000 disabled *****
i2c@f9964000 {
+       #address-cells;
+       #size-cells;
+       clock-names;
+       clocks;
       compatible;
+       interrupts;
+       reg;
       status;
};
```
$ dt_node_info coincell

===== devices

===== nodes
/soc/spmi@fc4cf000/pm8941@0/qcom,coincell@2800 qcom,

===== nodes bound to a driver

===== nodes with a device

===== nodes not bound to a driver
/soc/spmi@fc4cf000/pm8941@0/qcom,coincell@2800 qcom,

===== nodes without a device
/soc/spmi@fc4cf000/pm8941@0/qcom,coincell@2800 qcom,
dt_node_info example 2

$ dt_node_info coincell
===== devices
/sys/devices/platform/soc/fc4cf000.spmi/spmi-0/0-00/

===== nodes
/soc/spmi@fc4cf000/pm8941@0/qcom,coincell@2800 qcom,

===== nodes bound to a driver

===== nodes with a device
/soc/spmi@fc4cf000/pm8941@0/qcom,coincell@2800 qcom,

===== nodes not bound to a driver
/soc/spmi@fc4cf000/pm8941@0/qcom,coincell@2800 qcom,

===== nodes without a device
Dynamic devicetree, etc

Pantelis Antoniou
Odds and Ends

- dtc warnings
- dtc changes for overlays
- for_all_nodes vs for_all_nodes_available
- locking issues
- hw description vs configuration vs policy
THE END

Thank you for your attention...
Questions?
How to get a copy of the slides

1) leave a business card with me
2) frank.rowand@am.sony.com
   frowand.list@gmail.com
3) http://elinux.org/Device_Tree
4) http://events.linuxfoundation.org