Agenda

- ION Destaging (dma-heaps) - John Stultz
- Hikey960 Updates - John Stultz
- Mainline kernel on Pixel3 Progress - Amit Pundir
- LCR Status - Yongqin Liu
- AOSP TV status - Show Liu
- LTP-DDT on Hikey - Orson Zhai
ION destaging,
Hikey960 Updates

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john.stultz@linaro.org
ION Destaging (dma-buf-heaps)

- Collaboration and movement on changing to per-heap devices
- New interface rather than breaking the existing one:
  - /dev/dma-heap/*
- Simplified API
  - Most of the work pushed into per-heap code with optional helper functions

**FEEDBACK REQUESTED!**

- Also working w/ community and Google devs on trying to fix how Android uses dma-bufs, or to extend the dma-buf API to help minimize the amount of cache management operations that might be needed
HiKey960 Upstreaming

- UFS support landed in 4.19 (upstream boots to console!)
- DMA engine support landed in 5.1-rc1
- USB support being actively pushed (v5 sent out March 28th)
- I2S support being actively pushed (v2 sent out Feb 28th)
- Coresight support being actively pushed (v2 sent out March 2nd)
- DRM driver being reworked in preparation to push

Big thank you to Dr Su and the rest of the HiSi team for continuing upstreaming efforts on HiKey960!
HiKey960 TODOs

- Finish USB, I2S, DRM and Coresight upstreaming
- Panfrost GPU driver support/upstreaming
- UEFI by default transition
- Bugs!

HiKey960 continues to be very valuable for AOSP development & validation:

- drm_hwcomposer
- dma-heaps (ION destaging)
- dynamic partitions
- etc...
Mainline kernel on Pixel3 - Progress

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amit.pundir@linaro.org
Mainline kernel on Pixel3 - Progress

- Leveraging the QcomLT's sdm845 upstreaming work
  - Started with Bjorn's db845c tracking branch
  - Cherry picked “board-id” and “msm-id” from stock kernel to boot past bootloader checks on Pixel3

- Linux 5.1-rc1 boots to console with < 20 additional patches
  - UFS (SKHynix) works
  - ADB works
  - BT (WCN3990) seem to be initialized fine but not tested

- Issues/ToDo
  - UFS (Micron) support
  - Display driver, freedreno and panel support
  - Bootloader splash screen and iommu memory mapping conflicts
  - PON/reboot-reason support
LCR Status

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yongqin.liu@linaro.org
LCR Builds Status

- **Master based experiment builds**
  - HiKey + 4.14 + OP-TEE Master
  - X15 + 4.14
  - Mainly use to check build broken problem and boot problem with AOSP master
  - [Build System Changes for Android.mk Writers](#)

- **Pie Based builds under development**
  - HiKey + 4.14 + OP-TEE 3.4.0 released in 19.01
  - TI X15 + 4.19 is in progress
  - TI AM6X + 4.19 is in progress

- **Oreo MR1 based no development builds :**
  - X15 + 4.14 and HiKey+4.9 + OP-TEE 3.3.0
  - Out of development, to be disabled after we have Pie builds for them

- **Derived Builds**
  - OP-TEE builds -- Maintained by SWG team victor.chong@linaro.org
  - TV LCR Build -- Maintained by LCG team show.liu@linaro.org
  - Some LKFT builds
LCR Report Management System

- **Current status**
  - Added some trend chart for checking purpose
  - Worked with bugs.linaro.org to report and list bugs
  - Added pages to show parsed cts/vts failures.
    - As we use sub plans to run cts/vts test, could not use the cts/vts test result directly
  - Added pages to show results for LKFT builds

- **Plans for future**
  - More features need to be added in future for bug investigation
    - Like support uploading local test results
    - Result/Changes comparison between 2 builds
    - Trend chart for builds/jobs/modules
  - Get jobs information from qa-report for LCR builds.
  - Make the system more official

- **Sites**
AOSP TV Status

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show.liu@linaro.org
AOSP TV Status

● Current status
○ LCG-2228: Maintain digital rights technologies in sync with MMWG and SWG
  ■ Playready secure time support on Android 9.0
  ○ Permissive mode + additional manually steps is needed for hikey

● Proposed Plan
○ Short term
  ■ More dev boards support for AOSP TV
    ● LD20, IMX8M
  ■ Set up and maintain AOSP master based AOSP builds in TV configuration
○ Long term
  ■ Additional input sources for AOSP TV
  ■ BLE/IR Remote support
  ■ HDMI CEC support in kernel and HALs
LTP-DDT on Hikey
Introduction, Progress and Ideas
Linaro Connect 2019
orson.zhai@linaro.org
Contents

- What is LTP-DDT?
- Why use it?
- How it works?
- What did we do?
- Possible to be merged into LTP?
- Run in containers?
What is LTP-DDT?

- A test tool for ARM based embedded devices, especially from Texas Instruments.
- Forked from LTP codebase and 1000+ new test cases were added in LTP manner.
- DDT means Device Driver Test.
- Cover about 40 subsystems under driver/ of Linux kernel source tree.
Why use LTP-DDT?

- TI use it to validate their ARM-based IC products.
- Advantages:
  - Use platform (by -P) to select different test suite collection for different boards.
    - i.e. we have added platform for Hikey6220.
  - A lots of test cases are only cared for embedded devices.
    - i.e. UART, SPI, I2C and MMC ..... 
  - The biggest open source **Unit Test** suite for Linux kernel device drivers so far.
- Limitations:
  - Some tests are designed for TI device drivers only.
  - Absent of some of auto-detection mechanism to skip unnecessary tests.
    - The author maybe think these should be deselected by platform ( -P ).
  - Some unusual commands are depended but not included in LTP-DDT itself.
How it works?

- **Installation**
  - `git clone http://arago-project.org/git/projects/test-automation/ltp-ddt.git`

- **Run test.**
  - `./runltp -P hikey -f ddt/uart`

- **Check log.**
  - Total Tests: 22
  - Total Skipped Tests: 0
  - Total Failures: 18
  - Kernel Version: 4.14.77-gfcd9ab2aa4ab-dirty
  - Machine Architecture: aarch64
  - Hostname: hikey

- **Main changes to original LTP**
  - `{src}/platform/*`
  - `{src}/testcases/ddt/*`
  - `{src}/runtest/ddt/*`
What did we do?

- Added platform for Hikey at upstream (by committing patches to DDT community).
- Selected 47 test suites each including hundreds of test cases for Hikey.
  - Check the list at this google doc.
- Ran on Hikey and got hundreds of FAILED items.
- Cleared suites
  - armv*: all passed with contributing 4 bug fixing patches to upstream.
  - watchdog: all passed with 1 bug fixing patch to upstream.
  - uart: all passed with 2 patches contributed.
  - gpio: partly passed. Some test logical need to be redesigned.
  - mmc: mostly passed. With 1 bug fixing patch.
Possible to be merged back to LTP?

- **Pros:**
  - LTP-DDT is derived from LTP and the code structure is almost not changed.
  - Even more, LTP-DDT is rebased on latest LTP tree occasionally in a long time.

- **Cons:**
  - Will LTP community accept *platform* selection?
    - LTP give impression to people that it is only focus on general Linux interfaces without caring about architecture or board difference.
  - Will LTP adapt with kernel module insertion?
    - Kernel module (.ko) files need to be compiled with target kernel headers.
Run in containers?

- **Motivation:**
  - LTP-DDT test cases often depend on a lot of external tools.
  - There is no way to check and install these tools automatically by now.

- **Challenge:**
  - Container must be set to be able to access /dev and /sys files.
  - Kernel module depends on kernel versions.
Thank you

Join Linaro to accelerate deployment of your Arm-based solutions through collaboration

contactus@linaro.org