HKG18-122: OpenSDK Rocko builds on DB410c, HiKey, Beagle X15

Andrey Konovalov (LHG)
Arthur She (LHG)
Open SDK OE builds

- Use the same OE build system as Reference Platform Builds do
- meta-lhg layer contains the components developed by LHG
- The builds are running in jenkins (ci.linaro.org)

<table>
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<tr>
<th>manifest branch</th>
<th>image to build</th>
<th>boards</th>
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<td>morty</td>
<td>rpb-westonchromium-image</td>
<td>am57xx-evm, db410c, hikey</td>
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<tr>
<td>rocko</td>
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<tr>
<td>playready/morty</td>
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- The images (morty and rocko, no wpe/morty yet) are published at
  http://snapshots.linaro.org/openembedded/pre-built/lhg/
OpenSDK OE builds: key components

HW accelerated graphics: whatever the BSP layers provide (meta-96boards, meta-qcom, meta-ti plus some recipes from meta-arago).
- db410c: hw-accelerated decoding using Venus engine (meta-qcom)
- am57xx-evm: gst ducati plugin which uses IVA HD accelerator (meta-arago)

Generic graphics, multimedia, and security software (* - meta-backports):
- Morty
  - wayland 1.11, weston 1.11, mesa 17.1.7*, gstreamer 1.12.2*, OPTEE 2.4.0, 4.9 linux kernel
- Rocko
  - wayland 1.14*, weston 3.0.0* (gl-renderer supports WL_SHM_FORMAT_NV12)
  - mesa 17.2.6*,
  - gstreamer 1.12.4*
  - OPTEE 2.4.0
  - Some BSP layers moved to 4.14 kernels (db410c, am57xx-evm)
Chromium + OpenCDM

- Morty builds
  - Use pinned commit from OSSSystems/meta-browser, master branch to get chromium-wayland_53.0.2785.143 (the morty branch has version 48)
  - ClearKey OpenCDM is implemented as ppapi plugin (chromium bbappend in meta-lhg)
  - Linaro CDMi recipe from meta-lhg
  - WIP: Unification of Linaro OpenCDM/CDMi to support WPE as well

- Rocko builds - work in progress
  - LHG pushed chromium-ozone-wayland_65.0.3315.0.r527534.igalia.1 recipe to meta-rpb layer to overlay the version 64 recipe in upstream meta-browser
  - WIP: moving ClearKey OpenCDM plugin to the new Chromium version, the migration from GYP to GN build system included.
meta-lhg structure

https://github.com/linaro-home/meta-lhg

- meta-lhg layer - components developed / being worked on in LHG:
  chromium bbappend to add OpenCDM plugin, CDMi and optee-aes-decryptor
  recipes, rpb-westonchromium-image, ...
- meta-lhg-integration layer - glue to integrate components external to LHG:
  e.g. ti-sgx-ddk-um_% . bbappend, linux-hikey_% . bbappend to enable SDP,
  ducati and vpe gst plugins from meta-arago, etc
- meta-lhg-wpe layer - WPE browser integration:
  lhg-westeros-wpe-image, and wpewebkit_0.1 . bbappend

The idea is to keep these layers small by sending the code upstream whenever
possible (meta-96boards, meta-rpb, meta-optee, meta-browser, etc).
WIP / Next steps

- SDP
- OpenCDM unification
- Complete migration to Rocko
- More boards (db820c?, hikey960?, Poplar?, iMX8?)
- ...
LHG CI-loop

- Builds are running in jenkins (rocko and wpe/morty are still WIP)
  https://ci.linaro.org/view/All/job/lhg-oe-build/ (.../lhg-oe-rocko,
  .../lhg-ow-wpe-build)
- The jenkins job sends the images built to qa-reports.linaro.org for testing in
  LAVA.
  Currently this is done for the morty build for HiKey only, and the test case run
  is eme-clearkey-test.robot. (There are more tests using robot framework ready
  to be added to the test job.)
  The test results aren’t available from qa-reports.linaro.org top page, but one
  can go to the end of the log in jenkins, and find the link similar to
  https://qa-reports.linaro.org/testjob/243530 (the line next to “Submit to:
  https://qa-reports.linaro.org/api/...”).
Robotframework

- Keyword-driven test automation framework
  - Our test case would be looked like:
    
    Run-EME-ClearKey-test
    Open Browser To Test Page  ${CK_TESTPAGE}
    Select Key System  External Clearkey
    Sleep  5s
    Scroll Page Down To Bottom
    Play Video  Play
    Sleep  10s
    Capture Page Screenshot  filename=After.png
    There should be face in image  After.png

  - Use command “robot -v TARGET:192.168.29.149 eme-clearkey-test.robot” to run the test

- With SeleniumLibrary, we can do browser test automation
EME Clearkey test

- Chromium browser encrypted video playback test
- Using face recognition, by OpenCV, to determine the result
Run Robotframework test cases with LAVA

- Single node test job

- Use Dummy HDMI dongle to solve the problem that Weston will not start without a monitor attached
Other useful links

- [https://github.com/linaro-home/lhg-oe-manifests](https://github.com/linaro-home/lhg-oe-manifests)
The README.md there has the build instructions, and sometimes the instructions to run the image. Just select the proper branch (morty, rocko, wpe/morty).

- [https://github.com/andrey-konovalov/docs-test](https://github.com/andrey-konovalov/docs-test)
Some manual tests I regularly occasionally run. Should be obsoleted by the automated tests, but until then can be used as a reference of what test commands could be run on LHG builds.

- [https://github.com/linaro-home/lhg-robotframework-test](https://github.com/linaro-home/lhg-robotframework-test)
LHG Robotframework test cases
Thank You

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