openEuler Communication Kernel & Testing

June 10, 2020

Agenda

- Linux Kernel Update by Linaro - 15 mins

- Linux Kernel Functional Testing (LKFT) Introduction - 15 mins

- openEuler Introduction by Hanjun Guo - 15 mins

- Crystal Testing System by Fengguang Wu - 15 mins

- Open Discussions - 30 mins

Linux Kernel Update by Linaro

- Areas of activity:

    - Arm Kernel consolidation

    - Storage evolution

    - Performance & Power

    - Kernel maintenance

Linux Kernel: recent achievements #1

- y2038
  - Support after y2038 for 32bits platform

- Coresight support mainline

- BFQ I/O scheduler
  - Provide better latency fairness and bandwidth sharing
  - Maximize storage usage
  - Enabled in several distro

- Storage evolution
  - SD card update: among others discard feature
  - SDIO support

Linux Kernel: recent achievements #2

- Scheduler improvements
  - Rework load balance & PELT improvement
  - Thermal pressure

- Dynamic power consumption
  - CPU cluster idling
  - Next interrupt prediction

- System suspend :
  - system suspend collaboration with dynamic idle
  - S2Idle at S2RAM level

Linux Kernel: ongoing activity #1

- IOMMU
  - SVA for SMMUv3

- Remoteproc rpmessage
  - Early MCU boot

- Storage evolution
  - SD & emmc specification update

- BFQ I/O scheduler
 - Improving max throughput

Linux Kernel: ongoing activity #2

- Scheduler improvements
  - Further improvement for NUMA system

- Thermal and power budget
  - Userspace notification & Power capping

- SCMI
  - SCMI proxy server

LKFT

Linaro created the Linux Kernel Functional Test (LKFT) framework to:

- Maintain the quality of the Linux LTS and Android Common kernels
- Test on a variety of hardware using a wide variety of tests
- Identify functional regressions against previous releases
- Collate and report LTS Linux kernel and Android Common results via email and web dashboards

Learn more at lkft.linaro.org
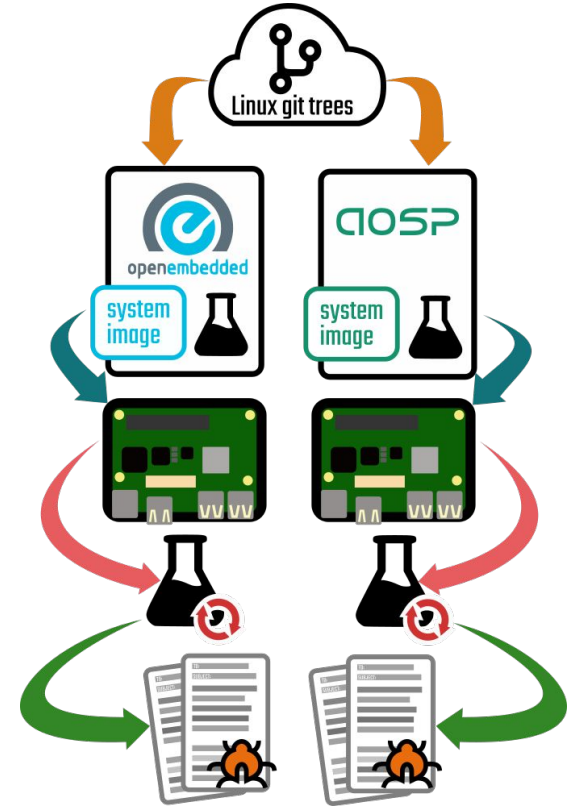
LKFT is MORE than just Automated Testing

Expand Test Coverage

Expand test coverage and enhance tests **quality** and automation

Trusted

LFKT provides test results to **Greg KH** (LTS linux maintainer) and **Google's AOSP team**

Backed by Experience

Backed by **kernel validation engineers** with direct access to Linaro **maintainers** and the **community**

Rapid Deployment

Remote labs provide a low cost and rapid deployment of test targets (HW)

Google works with Linaro and member SoC companies to test every LTS (Long Term Stable) Linux Kernel, and Android Common kernel release

Linaro's Linux Kernel Function Testing (LKFT)

Over 200 million functional tests against Linux LTS kernels run to date

    2.5 years of operational testing

    Testing on 11 Arm and Intel architectures (32-bit and 64-bit) hardware and virtual devices

    Testing Linux 4.4, 4.9, 4.14, 4.19 and 5.4 LTS releases as well as Stable, Mainline and -next

    Testing Android Common 4.4, 4.14,4.19, 5.4 and Mainline Kernels with AOSP

Linaro LKFT enabled Linux LTS support to be extended from 2 years to 6 years!

Constant Upstream Engagement

    Maintain a 48 hour LTS regression reporting SLA (99% success in 2019)

    Provide constant feedback to LTS maintainers

    Constantly working on improvements with upstream test-suite maintainers (eg. kselftest)
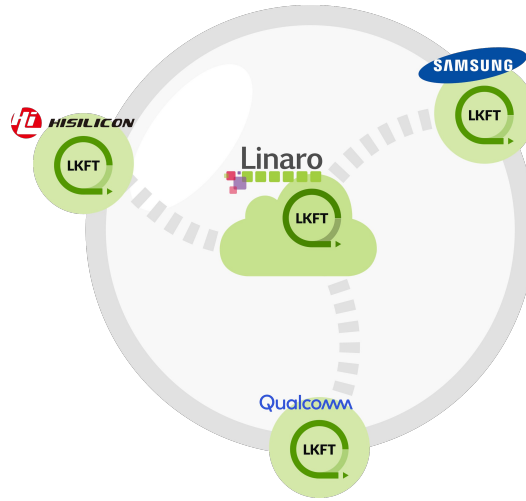
LKFT Remote Labs provides Linaro Club and Core members with an additional way to participate in LKFT

LKFT Remote Labs - Briefly

Devices remain in your lab and are connected to an LKFT Dispatcher.

LKFT Dispatchers connect securely to Linaro LKFT Master. You can remain in control of what information is visible to others.

The LKFT Master manages on-demand builds and test jobs--scheduling them on your hardware, collating results and generating private or public regression reports.
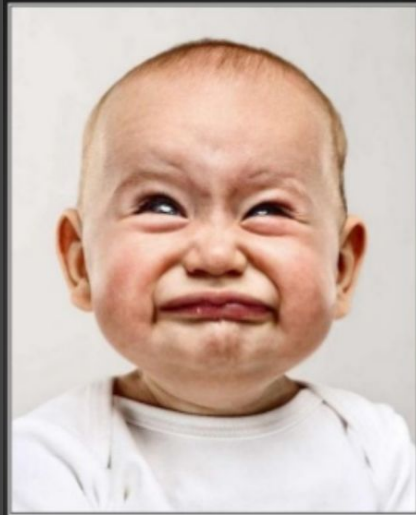
Enough slides! let's see something interesting

Thank you