

LAVA – The Linaro Automated Validation Architecture



Dave Pigott – November 2012



Why Linaro?

- Increased need for shared ARMv7/v8 development
- Fragmented ARM Linux in different industry segments
- OEM and distribution ready software stacks
- Place for ARM licensees to safely work together on new open source technology development
 - Very strong engineering team
 - Significant pieces of upstream plumbing merged
 - Roadmap of technology development published



Slide *

Linaro Overview

- Linaro is a not for profit engineering company that delivers core Linux technology for the benefit of members

Our key goals:

- Use shared investment to provide high ROI to members
- Accelerate time to market for member products
- Reduce fragmentation and resulting costs
- Work closely with ARM to deliver Linux software and tools for new ARM technology – big.LITTLE, server, ARMv8
- Make ARM a leading architecture in open source



Linaro: Proven Success in Linux

- #3 contributor to Linux Kernel 3.5
- High quality ARM GCC toolchain
- Device Tree for ARM
- Facilitated arm-soc sub-architecture maintainers group
- Common kernel memory management framework (UMM)
- Continuous Integration testing using LAVA test and validation platform on member hardware



Linaro Open Source Testing & Validation

- Open Source Software traditionally has limited testing
- LAVA – Linaro Automated Validation Architecture
- Populated only by Linaro members hardware
- Provides Members
 - Continuous Integration for daily build & testing
 - Smoke, System and Regression testing
 - Web dashboard for results and trends
 - Measures distribution quality & trends
- Framework is open source
- Linaro maintaining large and expanding farm of latest Member SoC boards



LAVA – What it is

- A framework for testing software on member hardware
 - Accepts "jobs" to perform on target device types
 - Jobs produce result bundles
 - LAVA itself is an enabler

The screenshot displays the LAVA Scheduler web interface. At the top, a navigation bar includes links for LAVA, Android Benchmarks, Dashboard, Graphics, Kernel CI, Projects, Scheduler, API, and Documentation, along with a sign-in link for a guest user. The main content area is titled "You are here: LAVA » Scheduler".

Device Type Overview

37/61 devices online
27/30 health check jobs passed in 24 hours

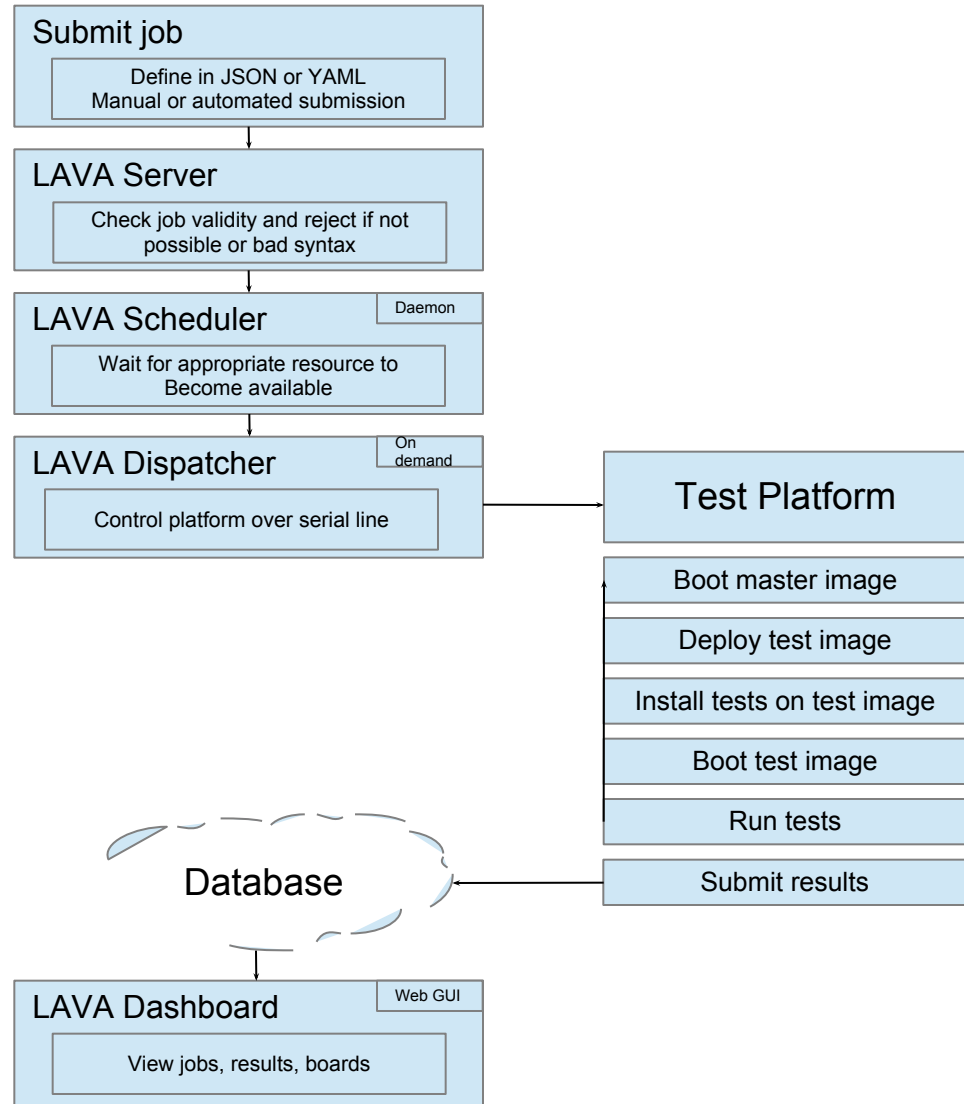
Below this, there is a table showing device status. The table has columns for Name and Status. The devices listed are: beaglexm (2 idle, 0 offline, 1 busy), origen (5 idle, 2 offline, 0 busy), panda (12 idle, 9 offline, 2 busy), panda-es (3 idle, 1 offline, 0 busy), rtssm_foundation-armv8 (1 idle, 0 offline, 0 busy), rtssm_ve-a15x1-a7x1 (1 idle, 0 offline, 0 busy), rtssm_ve-a15x4-a7x4 (2 idle, 0 offline, 0 busy), snowball_sd (2 idle, 3 offline, 4 busy), vexpress-a9 (2 idle, 0 offline, 0 busy), and vexpress-tc2 (0 idle, 3 offline, 0 busy).

Active Jobs

Below the device status table, there is a table showing active jobs. The table has columns for ID, Status, Device, Description, Submitter, and Submit Time. The jobs listed are:

ID	Status	Device	Description	Submitter	Submit Time
37873	Running	beaglexm01	lab-health-beaglexm	lava-health	Nov. 6, 2012, 1:38 p.m.
37872	Running	panda10	lab-health-panda	lava-health	Nov. 6, 2012, 1:32 p.m.
37385	Submitted	vexpress-tc2	https://android-build.linaro.org/jenkins/job/linaro-android-restricted_vexpress-jb-gcc47-armit-tracking-open-test/34/	android-build-system	Nov. 1, 2012, 6:33 a.m.
37283	Submitted	vexpress-tc2	https://android-build.linaro.org/jenkins/job/linaro-android-restricted_vexpress-jb-gcc47-armit-tracking-open-test/33/	android-build-system	Oct. 31, 2012, 6:52 a.m.
37269	Running	snowball03	https://android-build.linaro.org/jenkins/job/linaro-android-snowball-jb-gcc47-igloo-stable-blob/111/	android-build-system	Oct. 31, 2012, 4:42 a.m.
37189	Submitted	vexpress-tc2	https://android-build.linaro.org/jenkins/job/linaro-android-restricted_vexpress-jb-gcc47-armit-tracking-open-test/32/	android-build-system	Oct. 30, 2012, 6:50 a.m.
37176	Running	snowball08	https://android-build.linaro.org/jenkins/job/linaro-android-snowball-jb-gcc47-igloo-stable-blob/110/	android-build-system	Oct. 30, 2012, 4:42 a.m.
37094	Running	panda19	https://android-build.linaro.org/jenkins/job/linaro-android_panda-jb-gcc47-tilt-tracking-blob/97/	android-build-system	Oct. 29, 2012, 8:09 a.m.
37088	Submitted	vexpress-tc2	https://android-build.linaro.org/jenkins/job/linaro-android-restricted_vexpress-jb-gcc47-armit-tracking-open-test/31/	android-build-system	Oct. 29, 2012, 6:45 a.m.
36991	Submitted	vexpress-tc2	https://android-build.linaro.org/jenkins/job/linaro-android-restricted_vexpress-jb-gcc47-armit-tracking-open-test/30/	android-build-system	Oct. 28, 2012, 6:46 a.m.

LAVA Workflow

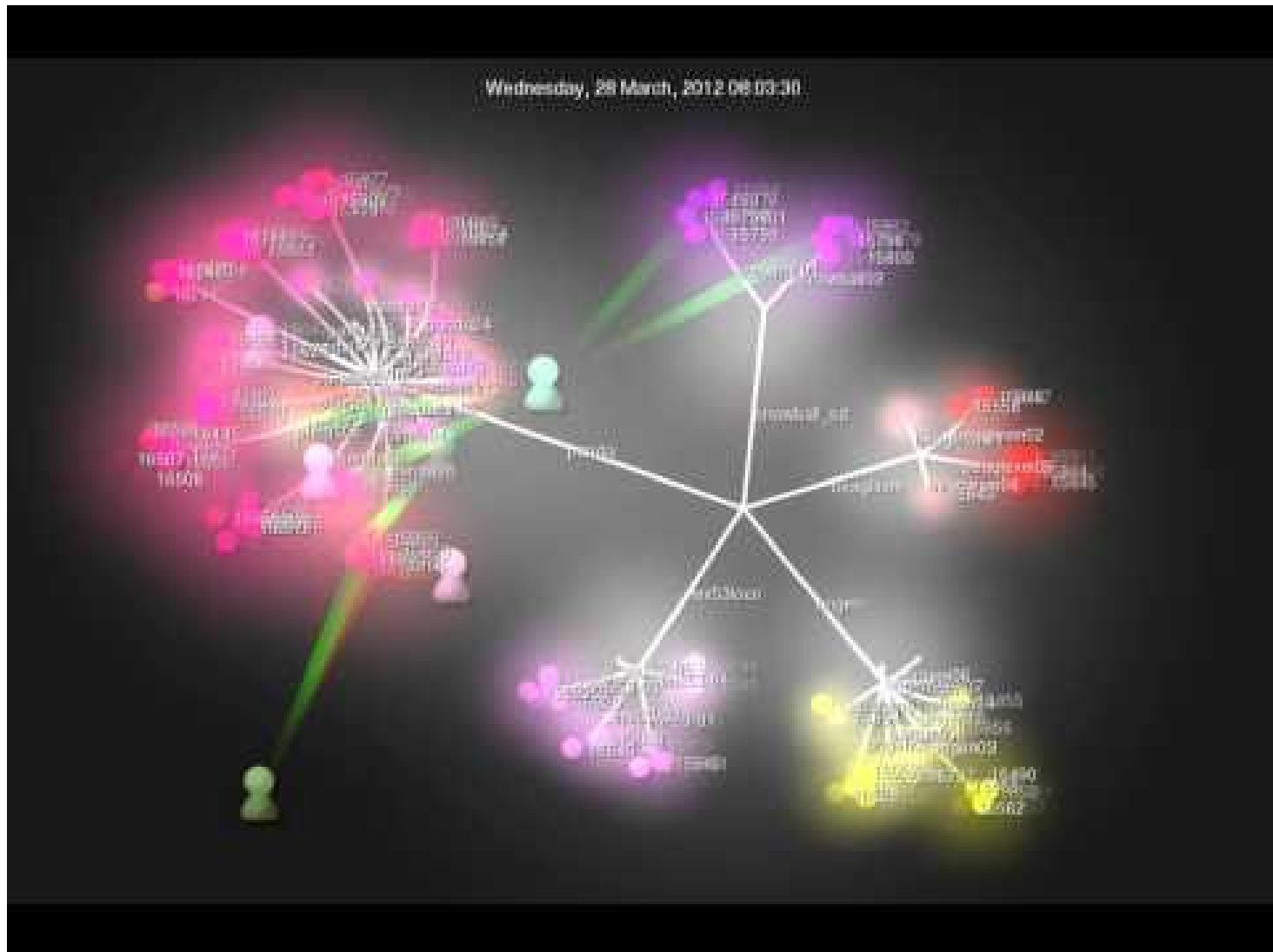


The Farm

- LAVA lab is populated by member hardware
- Includes VExpress, TC2 and FastModels (big.LITTLE, v8)
- Developers have set up "LAVA@home"
- Members are working on private deployments



LAVA Lab Usage



Plans

- Extending test capabilities
- Power management
- Audio capture and validation
- Support for consumer devices
- Linaro Enterprise Group (LEG)
adding servers to farm
- Bootloader testing with SD-MUX



Summary

- LAVA usage is growing
- LAVA interest is growing
- LAVA lab expanding
- Enough requirements to keep us busy





Q&A

Linaro Connect: connect.linaro.org

- Linaro Community Technical Conference held 3x per year
- Agree technical priorities & deliver on roadmap for ARM open source
 - Focus on member requirements
- 300 attendees from 80 companies
- Week-long event
 - Up to 95 morning sessions
 - 5 afternoons of hacking in working groups

Dates	Location
4 – 8 Mar 2013	Hong Kong
24 – 28 Jun 2013	EU (TBC)
Oct 2013	US (TBC)

