

LAVA Project Update

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About LAVA

- Framework used by Linaro for automated testing
- Extensible web frontend
- Device management and automated deployment
- APIs and command line tools
- Tools for automating test suites on Ubuntu and Android based Linaro builds
- Support for many popular low-cost ARM dev boards
 - beagleXM, Panda, Snowball, Origen, mx51evk, mx53qs...
 - Support for new boards is easy to add

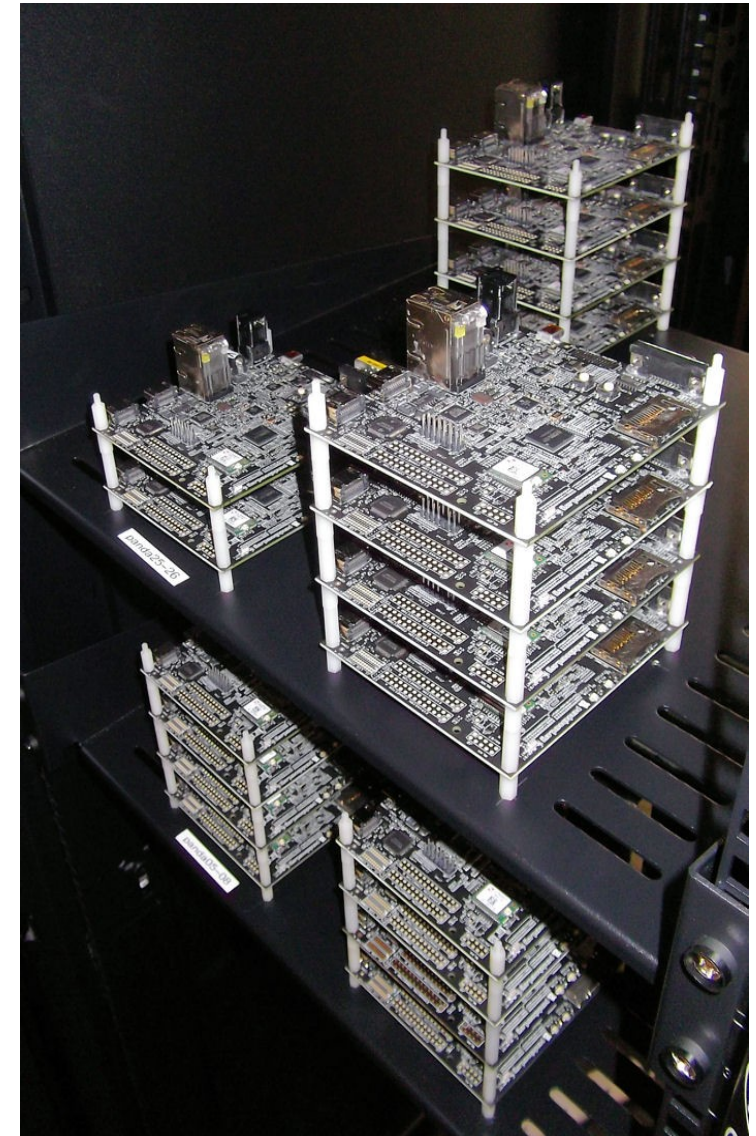
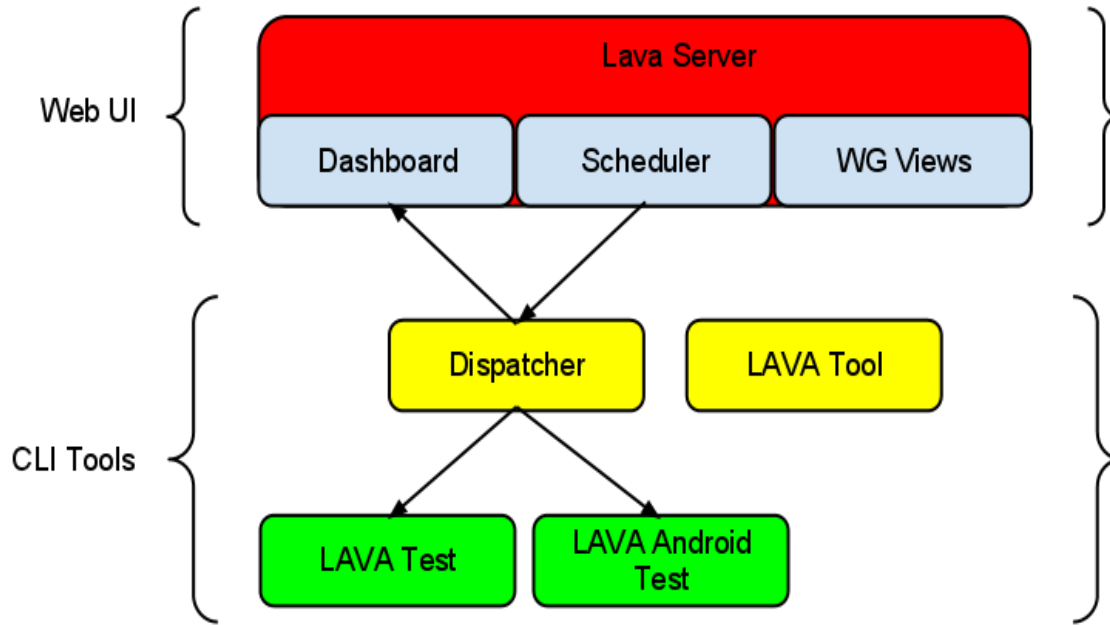


How Linaro Uses LAVA

- Daily automated tests of multiple images and hardware packs on Linaro member hardware
- Automated tests of new kernels/features
- Android continuous integration testing
- Kernel continuous integration testing
- Platform enablement tests



LAVA Architecture



Hardware Components

- Server(s)
- Network infrastructure
- Console servers
- Networked PDUs
- Racks of ARM Boards





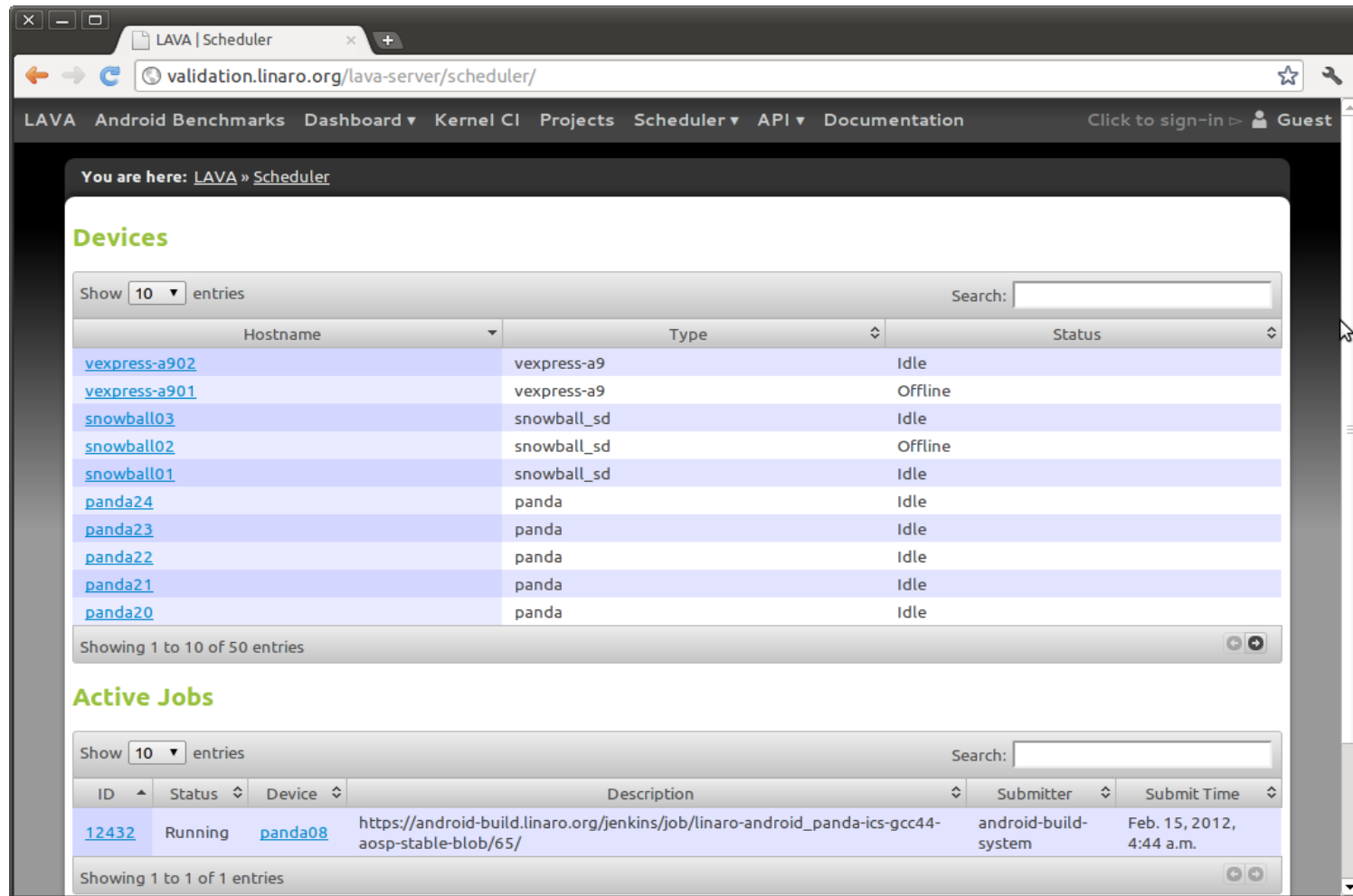
LAVA Components

- LAVA Server
- LAVA Dashboard
- LAVA Scheduler
- LAVA Dispatcher
- LAVA Test / LAVA Android Test



LAVA Scheduler

- Primary entry point for test jobs
- Displays current device status and current job status
- Provides XML-RPC API for job submission
- Provides command-line tools for job submission



The screenshot shows the LAVA Scheduler web interface. The browser address bar is `validation.linaro.org/lava-server/scheduler/`. The navigation menu includes: LAVA, Android Benchmarks, Dashboard, Kernel CI, Projects, Scheduler, API, and Documentation. The user is logged in as a Guest.

You are here: [LAVA](#) » [Scheduler](#)

Devices

Show 10 entries Search:

Hostname	Type	Status
vexpress-a902	vexpress-a9	Idle
vexpress-a901	vexpress-a9	Offline
snowball03	snowball_sd	Idle
snowball02	snowball_sd	Offline
snowball01	snowball_sd	Idle
panda24	panda	Idle
panda23	panda	Idle
panda22	panda	Idle
panda21	panda	Idle
panda20	panda	Idle

Showing 1 to 10 of 50 entries

Active Jobs

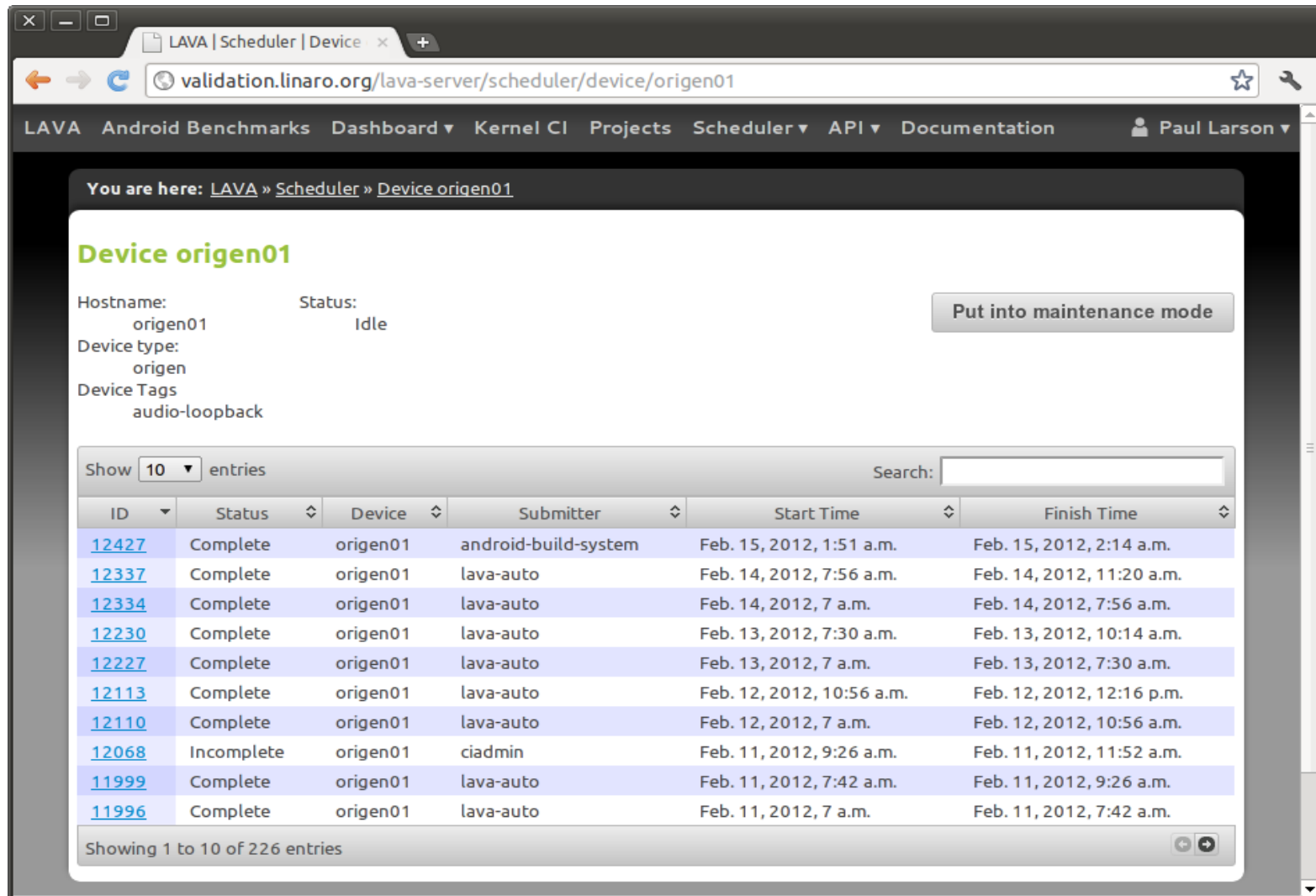
Show 10 entries Search:

ID	Status	Device	Description	Submitter	Submit Time
12432	Running	panda08	https://android-build.linaro.org/jenkins/job/linaro-android_panda-ics-gcc44-aosp-stable-blob/65/	android-build-system	Feb. 15, 2012, 4:44 a.m.

Showing 1 to 1 of 1 entries

LAVA Scheduler

- Device Details
- Admin functions for taking boards offline for maintenance



The screenshot displays the LAVA Scheduler web interface for the device 'origen01'. The browser address bar shows 'validation.linaro.org/lava-server/scheduler/device/origen01'. The navigation menu includes 'LAVA', 'Android Benchmarks', 'Dashboard', 'Kernel CI', 'Projects', 'Scheduler', 'API', and 'Documentation'. The user is identified as 'Paul Larson'.

You are here: [LAVA](#) » [Scheduler](#) » [Device origen01](#)

Device origen01

Hostname: origen01 Status: Idle [Put into maintenance mode](#)

Device type: origen

Device Tags: audio-loopback

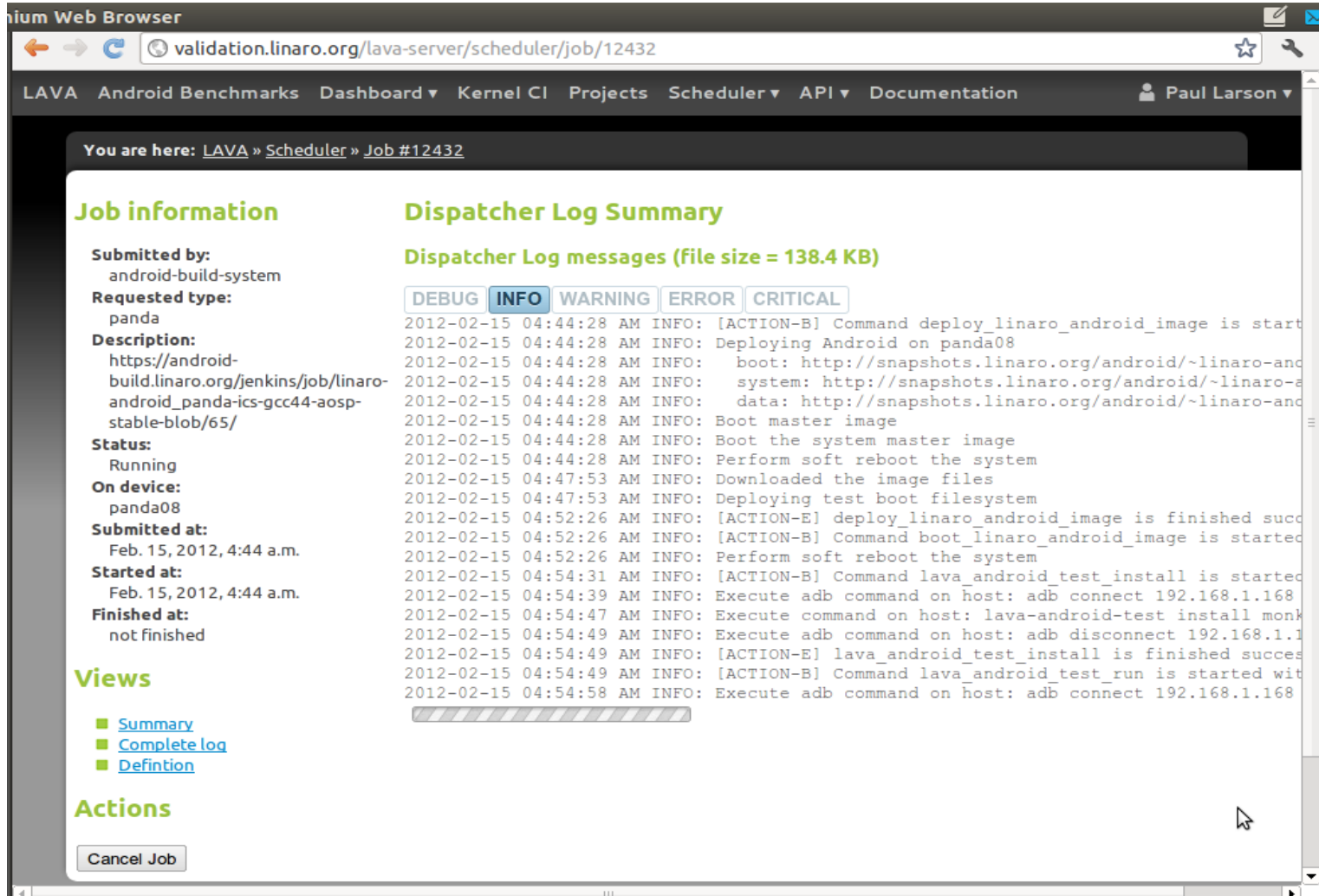
Show 10 entries Search:

ID	Status	Device	Submitter	Start Time	Finish Time
12427	Complete	origen01	android-build-system	Feb. 15, 2012, 1:51 a.m.	Feb. 15, 2012, 2:14 a.m.
12337	Complete	origen01	lava-auto	Feb. 14, 2012, 7:56 a.m.	Feb. 14, 2012, 11:20 a.m.
12334	Complete	origen01	lava-auto	Feb. 14, 2012, 7 a.m.	Feb. 14, 2012, 7:56 a.m.
12230	Complete	origen01	lava-auto	Feb. 13, 2012, 7:30 a.m.	Feb. 13, 2012, 10:14 a.m.
12227	Complete	origen01	lava-auto	Feb. 13, 2012, 7 a.m.	Feb. 13, 2012, 7:30 a.m.
12113	Complete	origen01	lava-auto	Feb. 12, 2012, 10:56 a.m.	Feb. 12, 2012, 12:16 p.m.
12110	Complete	origen01	lava-auto	Feb. 12, 2012, 7 a.m.	Feb. 12, 2012, 10:56 a.m.
12068	Incomplete	origen01	ciadmin	Feb. 11, 2012, 9:26 a.m.	Feb. 11, 2012, 11:52 a.m.
11999	Complete	origen01	lava-auto	Feb. 11, 2012, 7:42 a.m.	Feb. 11, 2012, 9:26 a.m.
11996	Complete	origen01	lava-auto	Feb. 11, 2012, 7 a.m.	Feb. 11, 2012, 7:42 a.m.

Showing 1 to 10 of 226 entries

LAVA Scheduler

- Live monitoring of jobs in progress
- Job Cancellation
- Results link (once the job is complete)



The screenshot shows a web browser window displaying the LAVA Scheduler interface. The browser address bar shows the URL `validation.linaro.org/lava-server/scheduler/job/12432`. The page title is "LAVA Scheduler" and the user is logged in as "Paul Larson".

You are here: [LAVA](#) » [Scheduler](#) » [Job #12432](#)

Job information

- Submitted by:** android-build-system
- Requested type:** panda
- Description:** https://android-build.linaro.org/jenkins/job/linaro-android_panda-ics-gcc44-aosp-stable-blob/65/
- Status:** Running
- On device:** panda08
- Submitted at:** Feb. 15, 2012, 4:44 a.m.
- Started at:** Feb. 15, 2012, 4:44 a.m.
- Finished at:** not finished

Views

- [Summary](#)
- [Complete log](#)
- [Definition](#)

Actions

Dispatcher Log Summary

Dispatcher Log messages (file size = 138.4 KB)

```
2012-02-15 04:44:28 AM INFO: [ACTION-B] Command deploy_linaro_android_image is started
2012-02-15 04:44:28 AM INFO: Deploying Android on panda08
2012-02-15 04:44:28 AM INFO:   boot: http://snapshots.linaro.org/android/~linaro-anc
2012-02-15 04:44:28 AM INFO:   system: http://snapshots.linaro.org/android/~linaro-anc
2012-02-15 04:44:28 AM INFO:   data: http://snapshots.linaro.org/android/~linaro-anc
2012-02-15 04:44:28 AM INFO: Boot master image
2012-02-15 04:44:28 AM INFO: Boot the system master image
2012-02-15 04:44:28 AM INFO: Perform soft reboot the system
2012-02-15 04:47:53 AM INFO: Downloaded the image files
2012-02-15 04:47:53 AM INFO: Deploying test boot filesystem
2012-02-15 04:52:26 AM INFO: [ACTION-E] deploy_linaro_android_image is finished success
2012-02-15 04:52:26 AM INFO: [ACTION-B] Command boot_linaro_android_image is started
2012-02-15 04:52:26 AM INFO: Perform soft reboot the system
2012-02-15 04:54:31 AM INFO: [ACTION-B] Command lava_android_test_install is started
2012-02-15 04:54:39 AM INFO: Execute adb command on host: adb connect 192.168.1.168
2012-02-15 04:54:47 AM INFO: Execute command on host: lava-android-test install monkey
2012-02-15 04:54:49 AM INFO: Execute adb command on host: adb disconnect 192.168.1.168
2012-02-15 04:54:49 AM INFO: [ACTION-E] lava_android_test_install is finished success
2012-02-15 04:54:49 AM INFO: [ACTION-B] Command lava_android_test_run is started with
2012-02-15 04:54:58 AM INFO: Execute adb command on host: adb connect 192.168.1.168
```

LAVA Dispatcher

- Talks to the individual test devices
- Based around running predefined 'actions'
 - Actions do things like deploying images, running tests, and submitting results
 - Actions can take parameters
 - New actions can be added in-tree, or as plugins
- Currently supports Linaro and Android image deployments
- Local board configuration details are stored in config files
 - inheritance for board type config, specific board config
- Can be used standalone, or kicked off by the scheduler daemon



LAVA Test

- Provides a uniform interface for installing tests, running them, and parsing results
- Test wrappers act as the "glue" between individual test suites and LAVA
- Supports out-of-tree tests for tests that can't be included
- Test parameter defaults can be overridden
- Can be used standalone for convenient local execution

LAVA Android Test

- Provides the Above functionality for Android testing
- Uses ADB to talk to Android devices rather than running locally



LAVA Dashboard

- Storage and retrieval of raw test results and attachments
- Provides XML-RPC API for results submission
- Provides command-line interface to the API

Some Terminology:

- Bundle Stream - A way of organizing related result bundles
- Result Bundle - a set of results submitted after a testing session, can contain multiple test runs, as well as other information about the system where the testing was performed
- Test Run - The results from a single test suite
- Test Case - The individual id and result of a single test within a test run



LAVA Server

- Server framework for LAVA web components
 - Ties together all the previous web components we've discussed
- Extensions can be written to add functionality
- Dashboard and Scheduler are the primary extensions
- Extensions can also be written to do things like special data or results handling (example: Kernel CI results)

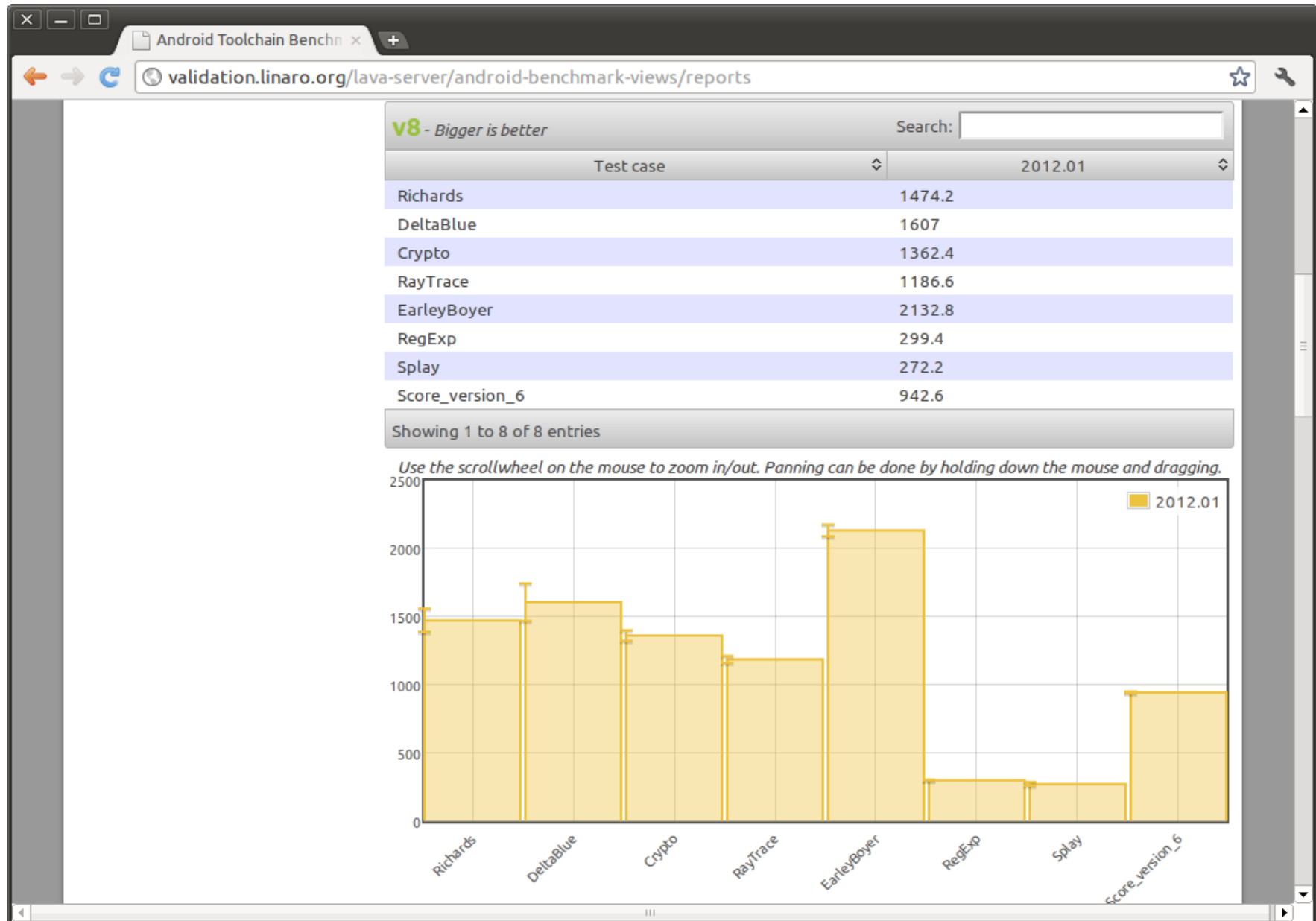


Extending LAVA Server

- You can use existing data in other extensions
 - Such as the dashboard or scheduler data
- Add new models for storing new things, or denormalizing existing data
- Create new views for visualizing your data
- Add new features not provided elsewhere
- Extend the xmlrpc API

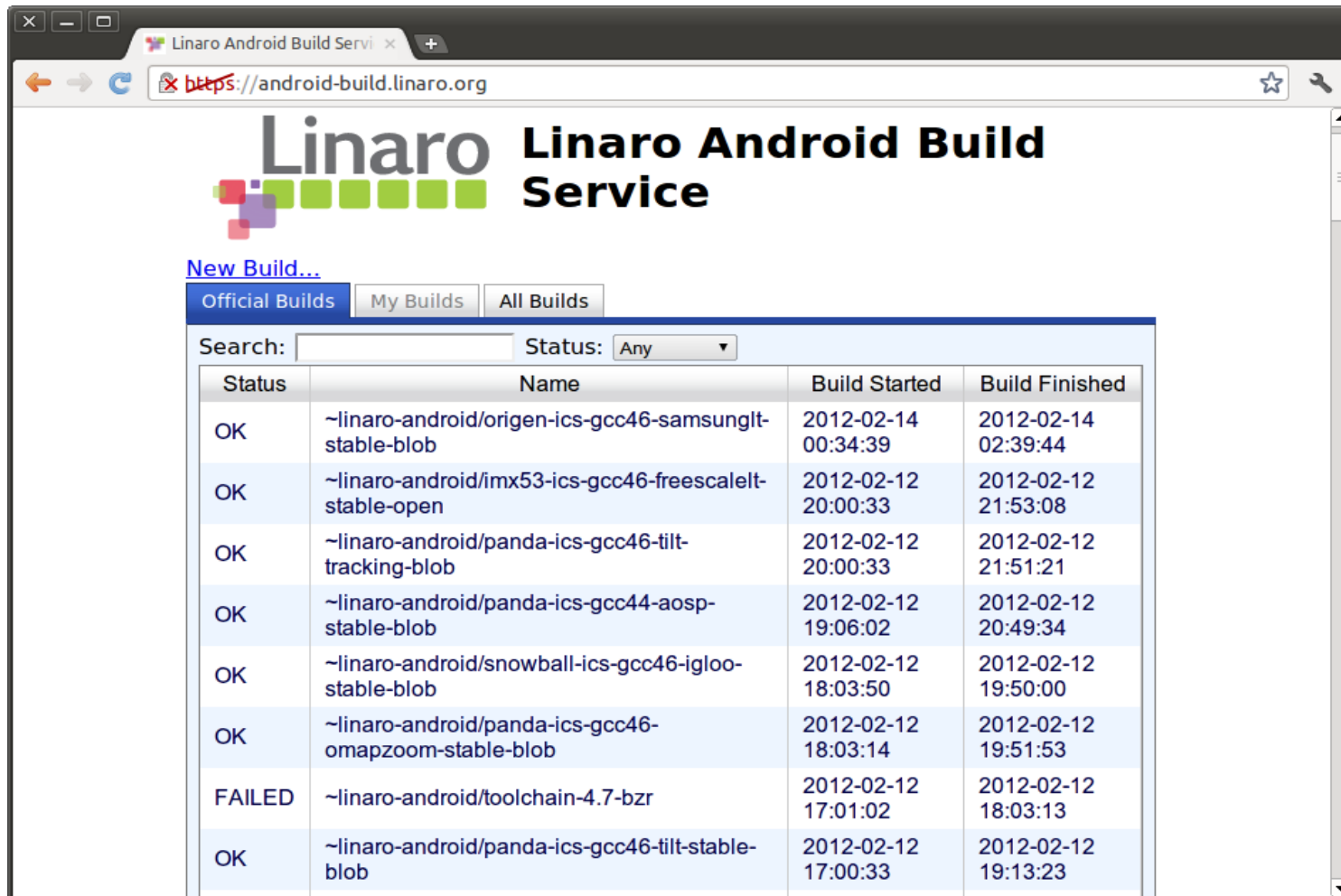


An example: Android Benchmarks



Android CI Loop

- Linaro android-build system - frontend to Jenkins
- Submit test job to LAVA Scheduler if successful
 - Test results submitted to LAVA Dashboard

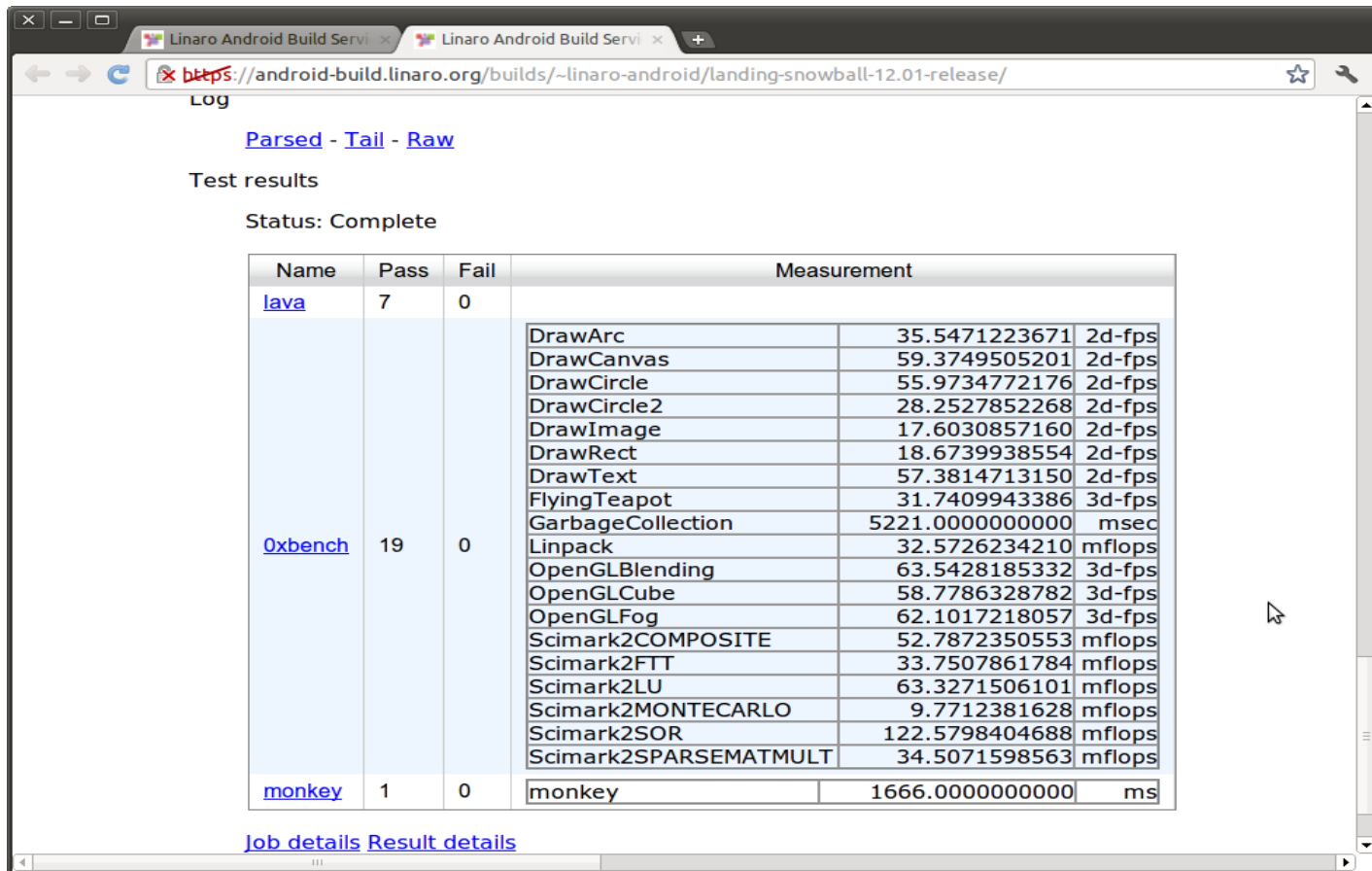


The screenshot shows the Linaro Android Build Service web interface. The page title is "Linaro Android Build Service". Below the title, there are tabs for "Official Builds", "My Builds", and "All Builds". A search bar and a status dropdown menu are visible. The main content is a table with the following data:

Status	Name	Build Started	Build Finished
OK	~linaro-android/origen-ics-gcc46-samsunglt-stable-blob	2012-02-14 00:34:39	2012-02-14 02:39:44
OK	~linaro-android/imx53-ics-gcc46-freescalelt-stable-open	2012-02-12 20:00:33	2012-02-12 21:53:08
OK	~linaro-android/panda-ics-gcc46-tilt-tracking-blob	2012-02-12 20:00:33	2012-02-12 21:51:21
OK	~linaro-android/panda-ics-gcc44-aosp-stable-blob	2012-02-12 19:06:02	2012-02-12 20:49:34
OK	~linaro-android/snowball-ics-gcc46-igloo-stable-blob	2012-02-12 18:03:50	2012-02-12 19:50:00
OK	~linaro-android/panda-ics-gcc46-omapzoom-stable-blob	2012-02-12 18:03:14	2012-02-12 19:51:53
FAILED	~linaro-android/toolchain-4.7-bzr	2012-02-12 17:01:02	2012-02-12 18:03:13
OK	~linaro-android/panda-ics-gcc46-tilt-stable-blob	2012-02-12 17:00:33	2012-02-12 19:13:23

Android CI Loop

- JSON view of test results referenced by job id
- Results can be displayed on the android-build summary page



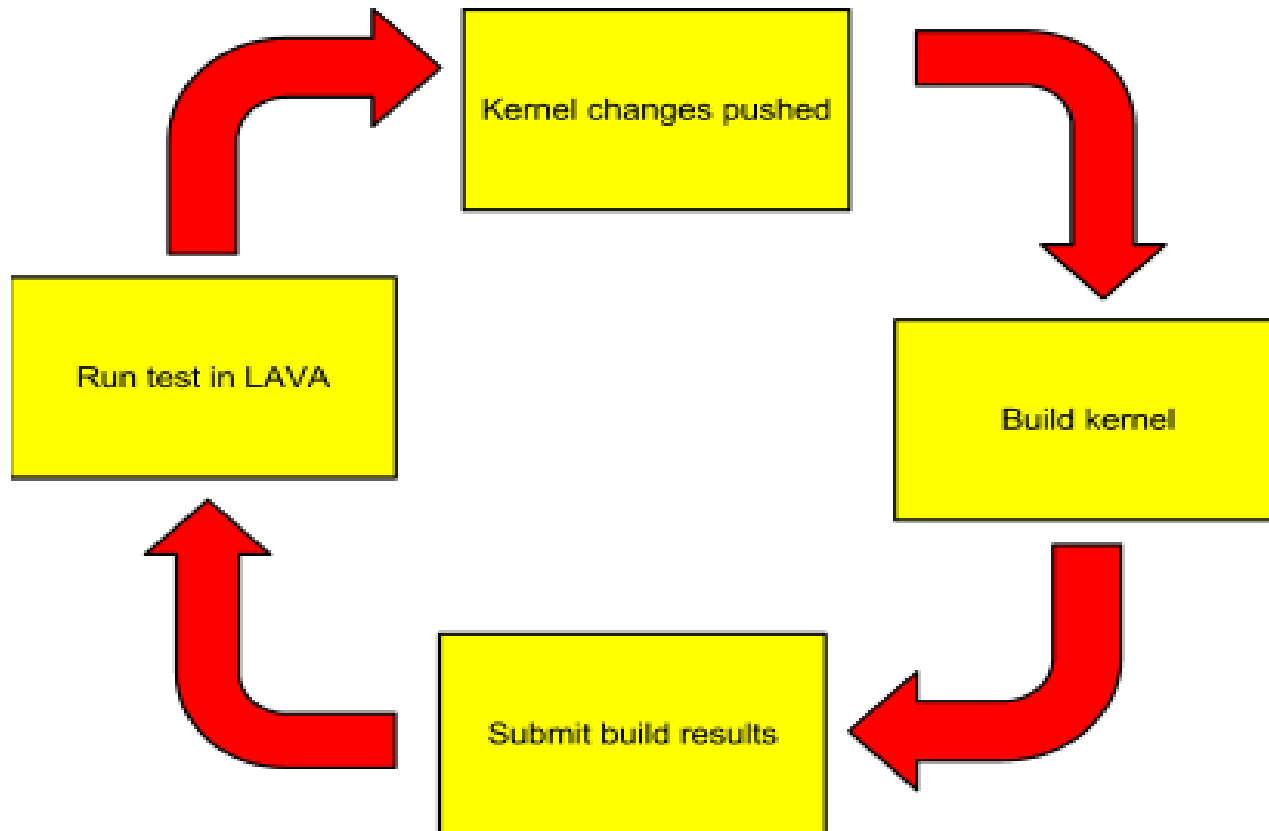
The screenshot shows a web browser window with the URL `https://android-build.linaro.org/builds/~linaro-android/landing-snowball-12.01-release/`. The page displays test results for a job that is "Complete". The results are organized into three main categories: **lava**, **Oxbench**, and **monkey**. Each category has a summary row and a detailed table of measurements.

Name	Pass	Fail	Measurement		
lava	7	0	DrawArc	35.5471223671	2d-fps
			DrawCanvas	59.3749505201	2d-fps
			DrawCircle	55.9734772176	2d-fps
			DrawCircle2	28.2527852268	2d-fps
			DrawImage	17.6030857160	2d-fps
			DrawRect	18.6739938554	2d-fps
			DrawText	57.3814713150	2d-fps
			FlyingTeapot	31.7409943386	3d-fps
			GarbageCollection	5221.0000000000	msec
Oxbench	19	0	Linpack	32.5726234210	mflops
			OpenGLBlending	63.5428185332	3d-fps
			OpenGLCube	58.7786328782	3d-fps
			OpenGLFog	62.1017218057	3d-fps
			Scimark2COMPOSITE	52.7872350553	mflops
			Scimark2FTT	33.7507861784	mflops
			Scimark2LU	63.3271506101	mflops
			Scimark2MONTECARLO	9.7712381628	mflops
			Scimark2SOR	122.5798404688	mflops
			Scimark2SPARSEMATMULT	34.5071598563	mflops
monkey	1	0	monkey	1666.0000000000	ms



Kernel CI Loop

- Build system rebuilds trees when changes are detected
 - Build results submitted to LAVA Dashboard
- Submit test job to LAVA Scheduler if successful
 - Test results submitted to LAVA Dashboard
- LAVA Kernel CI View consolidates results



LAVA | Kernel CI | Tests run x

validation.linaro.org/lava-server/kernel-ci-views/per_board/panda

git://git.kernel.org/pub/scm/linux/kernel/git/linux-next.git git://git.kernel.org/pub/scm/linux/kernel/git/linux-tracing.git http://people.linaro.org/~asac/soc.git/ http://people.linaro.org/~asac/linaro-3.1.git/

Sunday February 12 2012

✓ pwrmgmt 138 / 138	✓ pwrmgmt 138 / 138	✓ pwrmgmt 138 / 138	✓ pwrmgmt 138 / 138
✗ ltp 1663 / 1759	✗ ltp 1744 / 1840	✗ ltp 1891 / 1970	✗ ltp 1887 / 1968
✓ boot_linaro_image	✓ boot_linaro_image	✓ boot_linaro_image	✓ boot_linaro_image
✓ lava_test_install	✓ lava_test_install	✓ lava_test_install	✓ lava_test_install
✓ Build of omap2plus	✓ Build of omap2plus	✓ Build of omap2plus	✓ Build of omap2plus
v3.3-rc3-5486-q08ae1d1 shortlog	v3.3-rc3-188-q3ec1e88	v2.6.35-rc5-74264-q19e0baf shortlog	v3.1.5-253-q2150f72 shortlog

Saturday February 11 2012

✓ pwrmgmt 138 / 138	✓ pwrmgmt 138 / 138	✓ pwrmgmt 138 / 138	✓ pwrmgmt 138 / 138
✗ ltp 1746 / 1842	✗ ltp 1680 / 1775	✗ ltp 1890 / 1969	✗ Build of omap2plus
✓ boot_linaro_image	✓ boot_linaro_image	✓ boot_linaro_image	✓ boot_linaro_image
✓ lava_test_install	✓ lava_test_install	✓ lava_test_install	✓ lava_test_install
✓ Build of omap2plus	✓ Build of omap2plus	✓ Build of omap2plus	✗ Build of omap2plus
v3.3-rc3-5486-q08ae1d1 shortlog	v3.3-rc3-171-q8df54d6	v2.6.35-rc5-74264-q19e0baf shortlog	v3.1.5-253-q2150f72 shortlog

Kernel CI Results View

Installing LAVA

```
$ bzr branch lp:lava-deployment-tool
```

- Handles deployment of any LAVA component and dependencies
- Uses pypi and virtualenv
- Multiple instances allowed on the same server
- Sets up databases
- Copies everything needed (with dependencies) for offline installs
- Backup/Restore commands
- Upgrades supported



Installing LAVA

\$ lava-deployment-tool setup

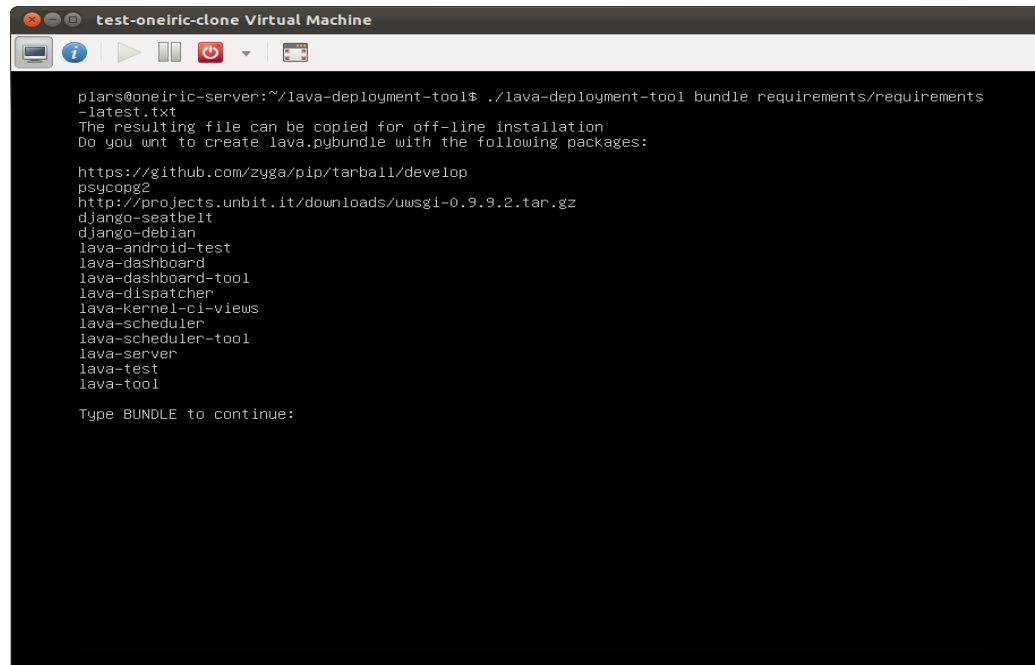
- Installs virtualenv, pip, uwsgi and other dependencies that will be needed



Installing LAVA

\$ lava-development-tool bundle requirements/requirements-latest.txt

- Creates a bundle of software specified in the requirements file
- Also downloads dependencies
- Bundle can be moved to any system and installed later
- Can be used with python package index (pypi) or source repositories
- Can also be downloaded from <https://launchpad.net/lava-project/+download>



```
test-oneiric-clone Virtual Machine
plars@oneiric-server:~/lava-deployment-tool$ ./lava-deployment-tool bundle requirements/requirements-latest.txt
The resulting file can be copied for off-line installation
Do you want to create lava.pybundle with the following packages:

https://github.com/zyga/pip/tarball/develop
psychopg2
http://projects.unbit.it/downloads/uwsgi-0.9.9.2.tar.gz
django-seatbelt
django-debian
lava-android-test
lava-dashboard
lava-dashboard-tool
lava-dispatcher
lava-kernel-ci-views
lava-scheduler
lava-scheduler-tool
lava-server
lava-test
lava-tool

Type BUNDLE to continue:
```



Installing LAVA

`$ lava-deployment-tool install myinstance lava.pybundle`

- Installs the software downloaded into the bundle
- Creates databases
- Runs migrations

```
plars@oneiric-server:~/lava-deployment-tool$ ./lava-deployment-tool install test lava.pybundle
=====
LAVA Deployment Tool
=====

Instance Configuration
-----

Before configuring your instance we need to ask you a few questions
The defaults are safe so feel free to use them without any changes

Note: it is safe to CTRL-C at this stage!

User account configuration
^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^^

We need to create a system user for this instance:
System user account configuration

User name:      'lava-test'
User description: 'User for LAVA instance test'

next - Use the user name as is
edit - Edit the user name
Please please decide what to do:
```



Creating an Admin user

- The admin user can access the django admin panel
- give permissions to other users
- add bundle streams, devices, device_types, etc

First, setup the virtual environment:

```
$ cd /srv/lava/instances/instance_name
```

```
$ . bin/activate
```

Create the user, answer a few questions:

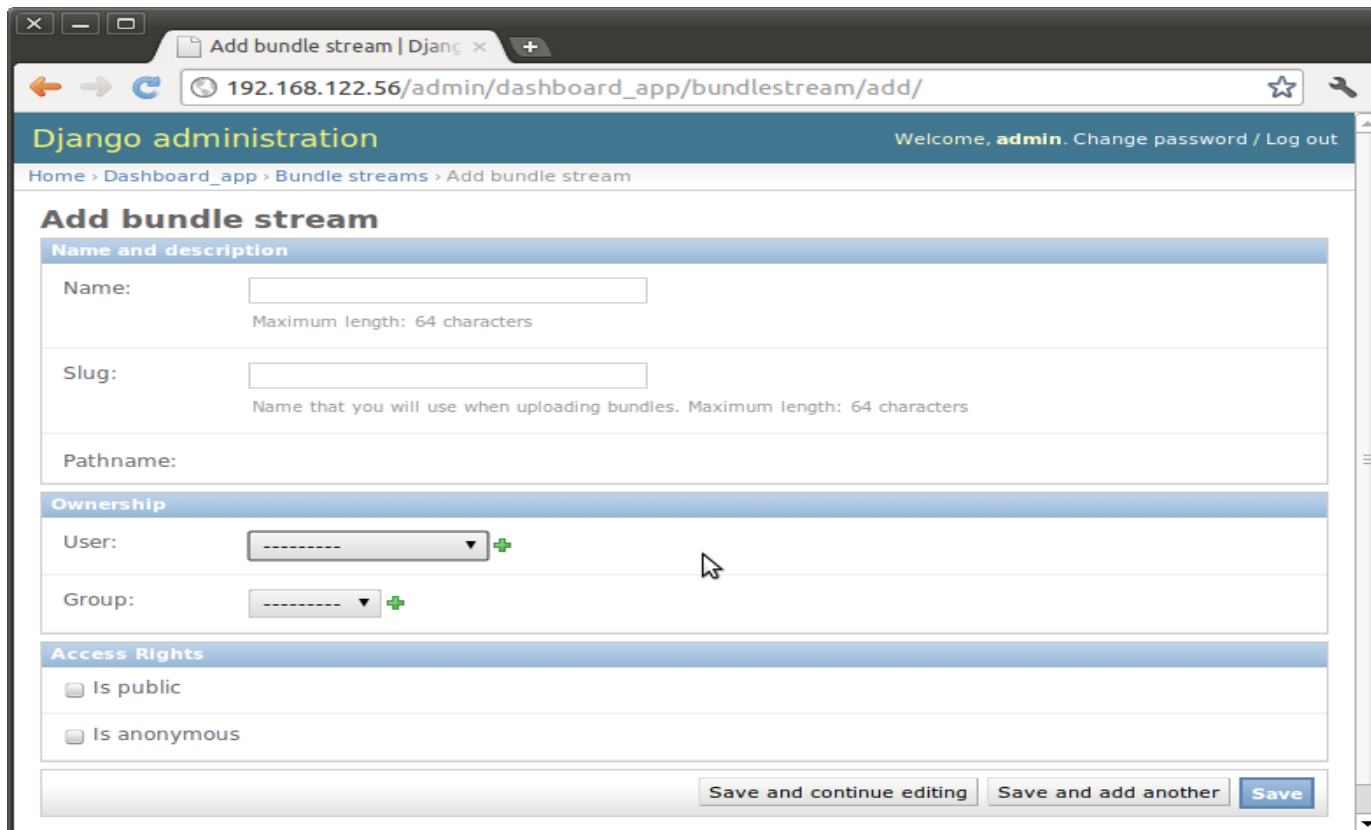
```
$ lava-server manage createsuperuser
```



Make a Bundle Stream

- Can be done from either the admin tool, or the command line

```
$ lava-dashboard-tool make-stream --dashboard-url  
http://localhost/RPC2 /anonymous/test/
```



The screenshot shows a web browser window with the URL `192.168.122.56/admin/dashboard_app/bundlestream/add/`. The page is titled "Add bundle stream" and is part of the "Django administration" interface. The user is logged in as "admin". The form is divided into several sections:

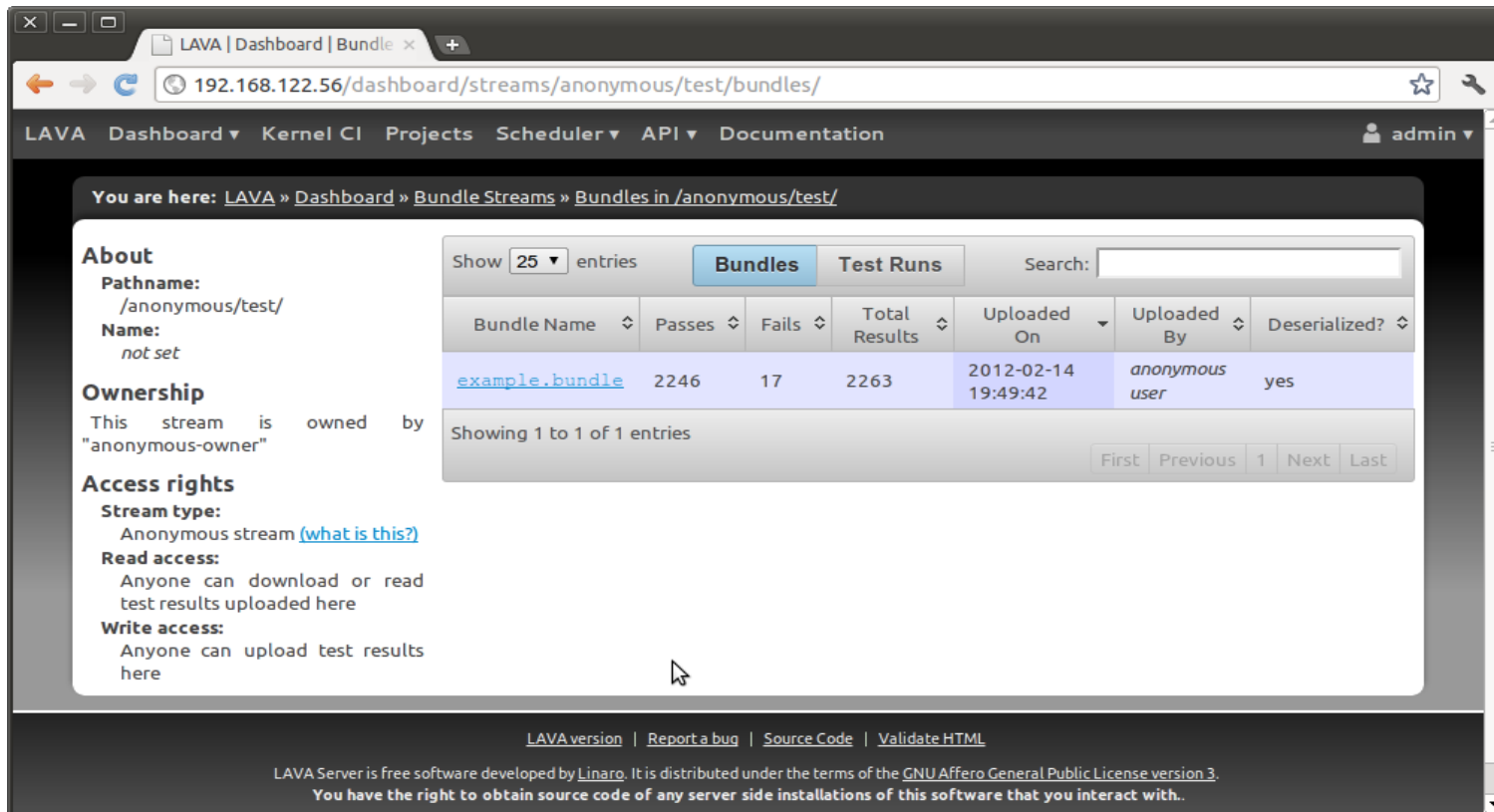
- Name and description:** Contains fields for "Name" (with a maximum length of 64 characters) and "Slug" (with a maximum length of 64 characters).
- Ownership:** Contains dropdown menus for "User" and "Group", each with a plus sign to the right.
- Access Rights:** Contains checkboxes for "Is public" and "Is anonymous".

At the bottom of the form, there are three buttons: "Save and continue editing", "Save and add another", and "Save".

Pushing a Test Result

- Normally this would happen as part of your test job

```
$ lava-dashboard-tool put --dashboard-url=http://localhost/RPC2 example.bundle /anonymous/test/
```



The screenshot shows a web browser window displaying the LAVA Dashboard. The URL is `192.168.122.56/dashboard/streams/anonymous/test/bundles/`. The page title is "LAVA | Dashboard | Bundle". The breadcrumb trail is "You are here: LAVA » Dashboard » Bundle Streams » Bundles in /anonymous/test/".

The main content area is divided into two sections. On the left, there is an "About" section with the following details:

- Pathname:** /anonymous/test/
- Name:** not set
- Ownership:** This stream is owned by "anonymous-owner"
- Access rights:**
 - Stream type:** Anonymous stream ([what is this?](#))
 - Read access:** Anyone can download or read test results uploaded here
 - Write access:** Anyone can upload test results here

On the right, there is a table of bundles. The table has columns for Bundle Name, Passes, Fails, Total Results, Uploaded On, Uploaded By, and Deserialized?. The table shows one entry:

Bundle Name	Passes	Fails	Total Results	Uploaded On	Uploaded By	Deserialized?
example.bundle	2246	17	2263	2012-02-14 19:49:42	anonymous user	yes

Below the table, it says "Showing 1 to 1 of 1 entries" and there are navigation buttons: First, Previous, 1, Next, Last.

At the bottom of the page, there are links for "LAVA version", "Report a bug", "Source Code", and "Validate HTML". A footer note states: "LAVA Server is free software developed by Linaro. It is distributed under the terms of the GNU Affero General Public License version 3. You have the right to obtain source code of any server side installations of this software that you interact with."



Getting More Information

Documentation

- lava.readthedocs.org

Source

- <http://launchpad.net/lava>

Our system

- <http://validation.linaro.org>

IRC

- #linaro on freenode.net (I'm plars there)

Mailing list

- linaro-validation@lists.linaro.org
- linaro-dev@lists.linaro.org



Backup



Anatomy of a Test Job

```
{
  "timeout": 18000,
  "actions": [
    {
      "command": "deploy_linaro_image",
      "parameters": {
        "hwpack": "http://snapshots.linaro.org/oneiric/lt-origen-oneiric/20120210/0/images/hwpack/hwpack_linaro-lt-origen_20120210-0_armel_supported.tar.gz",
        "rootfs": "http://snapshots.linaro.org/oneiric/linaro-o-ubuntu-desktop/20120210/0/images/tar/linaro-o-ubuntu-desktop-tar-20120210-0.tar.gz"
      },
      "metadata": {
        "hwpack.build": "0",
        "hwpack.date": "20120210",
        "hwpack.type": "lt-origen-oneiric",
        "rootfs.date": "20120210",
        "rootfs.type": "linaro-o-ubuntu-desktop",
        "rootfs.build": "0"
      }
    },
    {
      "command": "lava_test_install",
      "parameters": {
        "tests": [ "glmemperf" ],
        "timeout": 7200
      }
    },
    {
      "command": "boot_linaro_image"
    },
    {
      "command": "lava_test_run",
      "parameters": {
        "test_name": "glmemperf"
      }
    }
  ]
}
```

Anatomy of a Test Job

```
{
  "timeout": 18000,
  "actions": [
    {
      "command": "deploy_linaro_image",
      "parameters": {
        "hwpack": "http://snapshots.linaro.org/oneiric/lt-origen-
oneiric/20120210/0/images/hwpack/hwpack_linaro-lt-origen_20120210-
0_armel_supported.tar.gz",
        "rootfs": "http://snapshots.linaro.org/oneiric/linaro-o-ubuntu-
desktop/20120210/0/images/tar/linaro-o-ubuntu-desktop-tar-20120210-0.tar.gz"
      },
      "metadata": {
        "hwpack.build": "0",
        "hwpack.date": "20120210",
        "hwpack.type": "lt-origen-oneiric",
        "rootfs.date": "20120210",
        "rootfs.type": "linaro-o-ubuntu-desktop",
        "rootfs.build": "0"
      }
    },
    {
      "command": "lava_test_install",
      "parameters": {
        "tests": [ "glmemperf" ],
        "timeout": 7200
      }
    },
    {
      "command": "boot_linaro_image"
    },
    {
      "command": "lava_test_run",
      "parameters": {
        "test_name": "glmemperf"
      }
    }
  ]
},
....
```

Deploying a Linaro Image

Optional Metadata



Anatomy of a Test Job

```
{
  "timeout": 18000,
  "actions": [
    {
      "command": "deploy_linaro_image",
      "parameters": {
        "hwpack": "http://snapshots.linaro.org/oneiric/lt-origen-oneiric/20120210/0/images/hwpack/hwpack_linaro-lt-origen_20120210-0_armel_supported.tar.gz",
        "rootfs": "http://snapshots.linaro.org/oneiric/linaro-o-ubuntu-desktop/20120210/0/images/tar/linaro-o-ubuntu-desktop-tar-20120210-0.tar.gz"
      },
      "metadata": {
        "hwpack.build": "0",
        "hwpack.date": "20120210",
        "hwpack.type": "lt-origen-oneiric",
        "rootfs.date": "20120210",
        "rootfs.type": "linaro-o-ubuntu-desktop",
        "rootfs.build": "0"
      }
    },
    {
      "command": "lava_test_install",
      "parameters": {
        "tests": [ "glmemperf" ],
        "timeout": 7200
      }
    },
    {
      "command": "boot_linaro_image"
    },
    {
      "command": "lava_test_run",
      "parameters": {
        "test_name": "glmemperf"
      }
    },
    {
      "command": "submit_results",
      "parameters": {
        "stream": "/anonymous/lava-daily/",
        "server": "http://validation.linaro.org/lava-server/RPC2/"
      }
    }
  ],
  "job_name": "lt-origen-oneiric-20120210-0+linaro-o-ubuntu-desktop-20120210-0",
  "device_type": "origen"
}
```

Install lava-test and setup tests we intend to run



Anatomy of a Test Job

```
{
  "timeout": 18000,
  "actions": [
    {
      "command": "deploy_linaro_image",
      "parameters": {
        "hwpack": "http://snapshots.linaro.org/oneiric/lt-origen-oneiric/20120210/0/images/hwpack/hwpack_linaro-lt-origen_20120210-0_armel_supported.tar.gz",
        "rootfs": "http://snapshots.linaro.org/oneiric/linaro-o-ubuntu-desktop/20120210/0/images/tar/linaro-o-ubuntu-desktop-tar-20120210-0.tar.gz"
      },
      "metadata": {
        "hwpack.build": "0",
        "hwpack.date": "20120210",
        "hwpack.type": "lt-origen-oneiric",
        "rootfs.date": "20120210",
        "rootfs.type": "linaro-o-ubuntu-desktop",
        "rootfs.build": "0"
      }
    },
    {
      "command": "lava_test_install",
      "parameters": {
        "tests": [ "glimperfer" ],
        "timeout": 7200
      }
    },
    {
      "command": "boot_linaro_image"
    },
    {
      "command": "lava_test_run",
      "parameters": {
        "test_name": "glimperfer"
      }
    },
    {
      "command": "submit_results",
      "parameters": {
        "stream": "/anonymous/lava-daily/",
        "server": "http://validation.linaro.org/lava-server/RPC2/"
      }
    }
  ],
  "job_name": "lt-origen-oneiric-20120210-0+linaro-o-ubuntu-desktop-20120210-0",
  "device_type": "origen"
}
```

Boot into the test image



Anatomy of a Test Job

```
{
  "timeout": 18000,
  "actions": [
    {
      "command": "deploy_linaro_image",
      "parameters": {
        "hwpack": "http://snapshots.linaro.org/oneiric/lt-origen-oneiric/20120210/0/images/hwpack/hwpack_linaro-lt-origen_20120210-0_armel_supported.tar.gz",
        "rootfs": "http://snapshots.linaro.org/oneiric/linaro-o-ubuntu-desktop/20120210/0/images/tar/linaro-o-ubuntu-desktop-tar-20120210-0.tar.gz"
      },
      "metadata": {
        "hwpack.build": "0",
        "hwpack.date": "20120210",
        "hwpack.type": "lt-origen-oneiric",
        "rootfs.date": "20120210",
        "rootfs.type": "linaro-o-ubuntu-desktop",
        "rootfs.build": "0"
      }
    },
    {
      "command": "lava_test_install",
      "parameters": {
        "tests": [ "glmemper" ],
        "timeout": 7200
      }
    },
    {
      "command": "boot_linaro_image"
    },
    {
      "command": "lava_test_run",
      "parameters": {
        "test_name": "glmemper"
      }
    },
    {
      "command": "submit_results",
      "parameters": {
        "stream": "/anonymous/lava-daily/",
        "server": "http://validation.linaro.org/lava-server/RPC2/"
      }
    }
  ],
  "job_name": "lt-origen-oneiric-20120210-0+linaro-o-ubuntu-desktop-20120210-0",
  "device_type": "origen"
}
```

Run the test



Anatomy of a Test Job

```
{
  "timeout": 18000,
  "actions": [
    {
      "command": "deploy_linaro_image",
      "parameters": {
        "hwpack": "http://snapshots.linaro.org/oneiric/lt-origen-oneiric/20120210/0/images/hwpack/hwpack_linaro-lt-origen_20120210-0_armel_supported.tar.gz",
        "rootfs": "http://snapshots.linaro.org/oneiric/linaro-o-ubuntu-desktop/20120210/0/images/tar/linaro-o-ubuntu-desktop-tar-20120210-0.tar.gz"
      },
      "metadata": {
        "hwpack.build": "0",
        "hwpack.date": "20120210",
        "hwpack.type": "lt-origen-oneiric",
        "rootfs.date": "20120210",
        "rootfs.type": "linaro-o-ubuntu-desktop",
        "rootfs.build": "0"
      }
    },
    {
      "command": "lava_test_install",
      "parameters": {
        "tests": [ "glmemperf" ],
        "timeout": 7200
      }
    },
    {
      "command": "boot_linaro_image"
    },
    {
      "command": "lava_test_run",
      "parameters": {
        "test_name": "glmemperf"
      }
    }
  ],
  "job_name": "lt-origen-oneiric-20120210-0+linaro-o-ubuntu-desktop-20120210-0",
  "device_type": "origen"
}
```

Submit the results

```
{
  "command": "submit_results",
  "parameters": {
    "stream": "/anonymous/lava-daily/",
    "server": "http://validation.linaro.org/lava-server/RPC2/"
  }
}
```



Anatomy of a Test Job

```
{
  "timeout": 18000,
  "actions": [
    {
      "command": "deploy_linaro_image",
      "parameters": {
        "hwpack": "http://snapshots.linaro.org/oneiric/lt-origen-oneiric/20120210/0/images/hwpack/hwpack_linaro-lt-origen_20120210-0_armel_supported.tar.gz",
        "rootfs": "http://snapshots.linaro.org/oneiric/linaro-o-ubuntu-desktop/20120210/0/images/tar/linaro-o-ubuntu-desktop-tar-20120210-0.tar.gz"
      },
      "metadata": {
        "hwpack.build": "0",
        "hwpack.date": "20120210",
        "hwpack.type": "lt-origen-oneiric",
        "rootfs.date": "20120210",
        "rootfs.type": "linaro-o-ubuntu-desktop",
        "rootfs.build": "0"
      }
    },
    {
      "command": "lava_test_install",
      "parameters": {
        "tests": [ "glmemperf" ],
        "timeout": 7200
      }
    },
    {
      "command": "boot_linaro_image"
    },
    {
      "command": "lava_test_run",
      "parameters": {
        "test_name": "glmemperf"
      }
    },
    {
      "command": "submit_results",
      "parameters": {
        "stream": "/anonymous/lava-daily/",
        "server": "http://validation.linaro.org/lava-server/RPC2/"
      }
    }
  ],
  "job_name": "lt-origen-oneiric-20120210-0+linaro-o-ubuntu-desktop-20120210-0",
  "device_type": "origen"
}
```

Misc Setup stuff

