Living on Master:
Using Yocto Project, Jenkins and LAVA for a rolling release

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You’re doing it all wrong.

Here's why.
Traditional Approach: “Fork It and Forget It”

- Pin upstream at a fixed version
- Make changes in tree
- No patches sent upstream
Traditional Approach: “Fork It and Forget It”

- Obsolete from day one
- Upstream never stops
- Huge technical debt
Follow the Linux* kernel release model

- [Link](http://www.kroah.com/log/blog/2018/02/05/linux-kernel-release-model/)
- Upstream First
- Backport to stable branches
- Constantly moving code-base
Everyone has their own solution

Time to share.
Motivations

- Open Source
- Enterprise Class
- Off the Shelf
- Distributed
Inspirations

Ostro

IoT Refkit

kernelci.org

ELC(E) Hallway Track
System overview
Repository layout

- **top level repository**
  - Jenkinsfile
  - job.default.yaml
  - ci.yaml

- **ci-groovy-shared-libraries**

- **upstream submodules**
  - bitbake
  - openembedded-core
  - meta-openembedded

- **local directories**
  - meta-distro-layer
  - meta-bsp-layer
  - meta-app-layer
  - image_tests
  - ci-helper-scripts

- **internal submodule**
Use automation to stay up to date

- Continuous Integration job runs daily

1. `autosync git submodules`
2. `git review [pull request]`
3. `trigger build`
Testing production images

- Tests run on every build

LAVA* job → Network Boot (iPXE) → Custom initramfs → Flash production image to USB stick → Reboot → pytest

pytest is an Open Source testing framework
DUT = Device Under Test
LAN = Local Area Network
PDU = Power Distribution Unit
DUT = Device Under Test
LAN = Local Area Network
PDU = Power Distribution Unit
Next Steps

<table>
<thead>
<tr>
<th>Test Case Events</th>
<th>Measurements</th>
<th>Units</th>
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- Test Case events working well
- Measurements and Units under development
- Need to complete internal Open Sourcing process
Next Steps

- Industry Standard Result Formats
  - Test Anything Protocol
  - JUnit.xml

LAVA dashboard
Next Steps

Data Analysis and Visualization

Elastic Stack

Elasticsearch
Logstash
Kibana
Let’s do this.

Moving forward.
Reference Enterprise Class System

End-to-End Complete
- Orchestrated containers?
  - “Easy” to deploy
  - “Effortless” to replicate
- Internal Layer Index
- Jenkins Master
- Artifact server
- Data Visualization

Public LAVA server
- Share and Re-use test definitions
- Distributed LAVA dispatchers
  - Containerized
  - Better HW coverage
    - Each site focuses on platforms they care about
Questions?
Reference

- https://validation.linaro.org
- https://github.com/Linaro/lava-server
- https://github.com/Linaro/lava-dispatcher
- https://pytest.org
- https://github.com/pytest-dev
- https://git.linaro.org/lava-team/refactoring.git/
- https://kernelci.org
- https://jenkins.io
- https://www.elastic.co/
- https://lists.yoctoproject.org/listinfo/automated-testing
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