Eclipse oniro

Oniro CI/Testing integration with LAVA

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What is Oniro?

- a fully-connected all-scenario intelligent ecosystem within Eclipse foundation
- unique user experience across different consumer devices and scenarios
- providing every device maker with the same technology baseline, in an open trusted, transparent, collaborative way
- layered architecture built around the yocto project and bitbake build system
- consists of the kernel layer, system services layer, framework layer, and application layer (lot of things to test eh?)

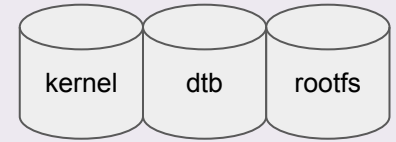
What is LAVA?

- **L**inaro **A**utomated **V**alidation **A**rchitecture
- Test execution system: **testing software** on **real hardware**
  - **Deploy, Boot and Test**
- Usages
  - Boot testing: kernelci
  - System level testing: lkft
  - Power consumption
  - Benchmarks
  - Multinode
    - Test with many devices
  - ...

LAVA
linaro.org/lava

Brief introduction to LAVA

Without LAVA




```
% power on board
% telnet localhost 2000
<enter>
=> dhcp
=> setenv serverip 10.3.1.1
=> […]
=> bootm 0x01000000 - 0x03f00000
[…]
raspberrypi4 login: root
# run-test.sh
[…]
% power off board
```

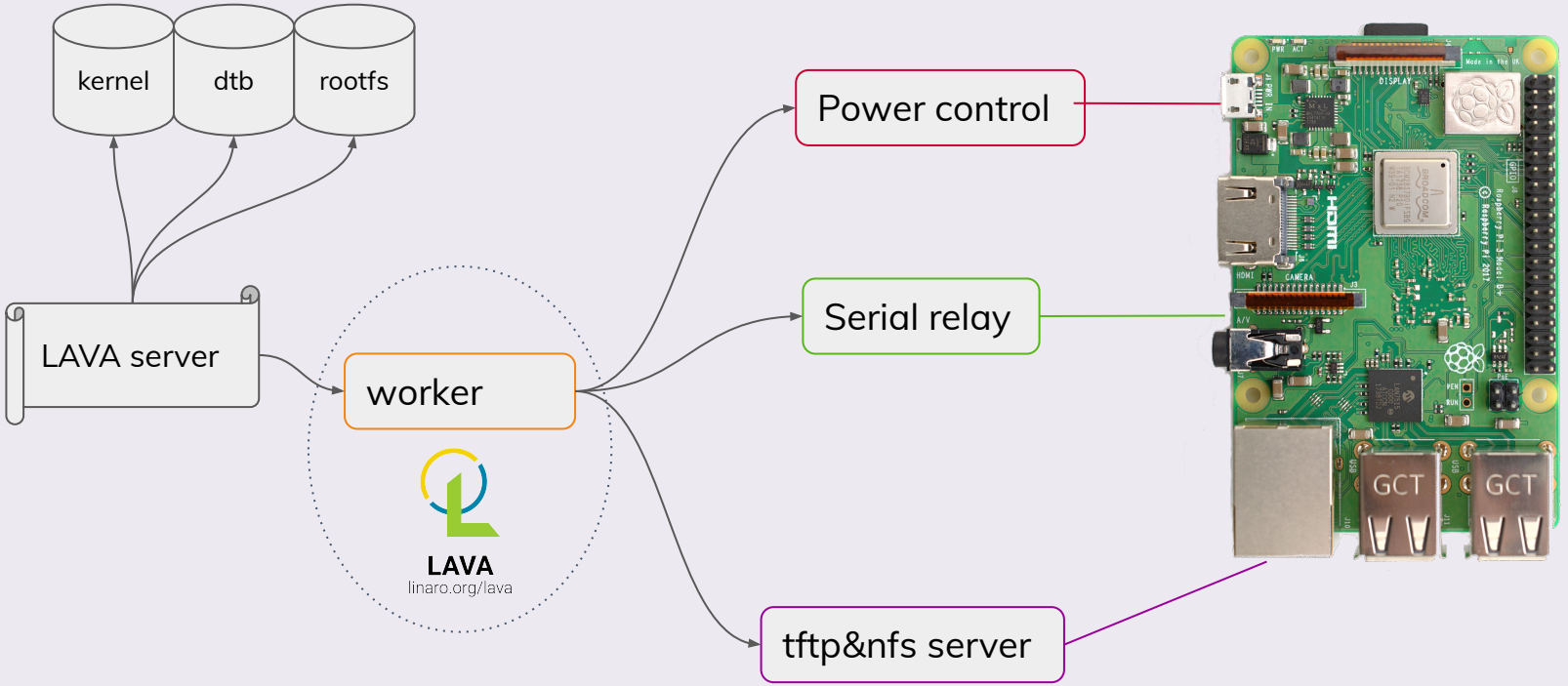
Power control

Serial relay

tftp&nfs server

Brief introduction to LAVA (cont.)

Testing with LAVA



Supported methods

deploy:

- tftp
- nbd
- flasher
- fastboot
- mps
- ssh
- docker
- vexpress ums
- ...

boot:

- cmsis
- uboot
- pyocd
- fastboot
- docker
- qemu
- grub
- iso installer
- ...

test:

- git repository
- interactive
- minimal
- multinode

Brief introduction to LAVA (cont.)

Supported device-types: 307

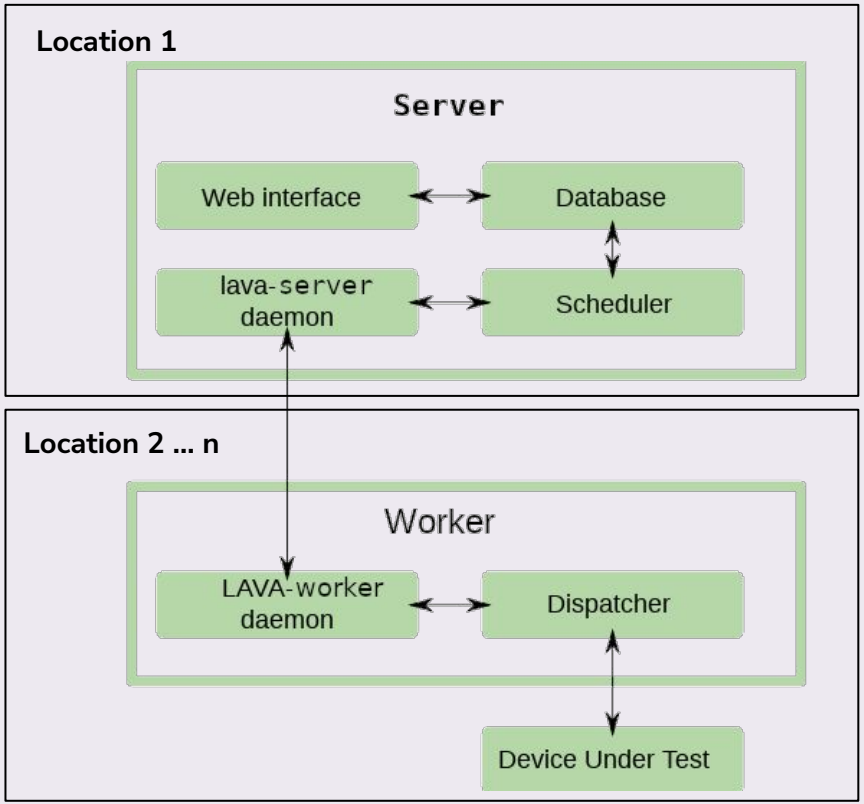
adb-nuc alpine-db am6 apq8016-sbc-uboot ar9331-dpt-module arduino101 armada-370-db armada-370-rd armada-3720-db armada-3720-espressobin armada-375-db armada-385-db-ap armada-388-clearfog armada-388-gp armada-398-db armada-7040-db armada-8040-db armada-xp-db armada-xp-gp armada-xp-linksys-mamba armada-xp-openblocks-ax3-4 arndale at91rm9200ek at91sam9261ek at91sam9m10g45ek at91sam9x25ek at91sam9x35ek at91-sama5d2_xplained at91-sama5d4_xplained b2120h410 b2260 base bcm2836-rpi-2-b bcm2837-rpi-3-b-32 bcm2837-rpi-3-b beaglebone-black-barebox beaglebone-black beagle-xm cc13x2-launchpad cc3220SF cubietruck d02 d03 da850-lcdk disco-l475-iot1 docker dove-cubox dra7-evm dragonboard-410c dragonboard-820c dragonboard-845c frdm-k64f frdm-kw41z fsl-imx8mm-evk fsl-imx8mq-evk hi6220-hikey-bl hi6220-hikey hi6220-hikey-r2 hi960-hikey hifive-unleashed-a00 highbank hip07-d05 hsdk ifc6410 imx23-olinuxino imx27-phytec-phycard-s-rdk imx28-duckbill imx53-qsrb imx6dl-riotboard imx6q-nitrogen6x imx6q-sabrelite imx6ul-pico-hobbit imx7s-warp imx8m imx8mn-ddr4-evk jetson-tk1 juno juno-uboot juno-uefi kirkwood-db-88f6282 kirkwood-openblocks_a7 kvm lava-slave-docker lxc mediatek-8173 meson8b-ec100 meson8b-odroidc1 meson-g12a-sei510 meson-g12a-u200 meson-g12a-x96-max meson-g12b-a311d-khadas-vim3 meson-g12b-odroid-n2 meson-gxbb-nanopi-k2 meson-gxbb-p200 meson-gxl-s805x-libretech-ac meson-gxl-s805x-p241 meson-gxl-s905d-p230 meson-gxl-s905x-khadas-vim meson-gxl-s905x-libretech-cc meson-gxl-s905x-p212 meson-gxm-khadas-vim2 meson-gxm-q200 meson-sm1-sei610 mimxrt1050_evk minnowboard-max-E3825 minnowboard-turbot-E3826 moonshot-m400 mps mustang-grub-efi mustang mustang-uefi nexus10 nexus4 nexus5x nexus9 nrf52-nitrogen nucleo-l476rg nxp-ls2088 odroid-n2 odroid-x2 odroid-xu3 orion5x-rd88f5182-nas overdrive ox820-cloudengines-pogoplug-series-3 panda peach-pi pixel poplar qcom-qdf2400 qcs404-evb-1k qcs404-evb-4k qemu-aarch64 qemu r8a7791-porter r8a7795-salvator-x r8a7796-m3ulcb r8a7796-m3ulcb-kf rk3288-rock2-square rk3288-veyron-jaq rk3328-rock64 rk3399-gru-kevin rk3399-puma-haikou rzn1d sama53d sama5d34ek sama5d36ek sdm845-mtp sharkl2 snow soca9 socfpga-cyclone5-socrates ssh stm32-carbon stm32mp157c-dk2 sun4i-a10-olinuxino-lime sun50i-a64-bananapi-m64 sun50i-a64-pine64-plus sun50i-h5-libretech-all-h3-cc sun50i-h6-orangepi-3 sun50i-h6-orangepi-one-plus sun50i-h6-pine-h64 sun50i-h6-pine-h64-model-b sun5i-a13-olinuxino-micro sun5i-gr8-chip-pro sun5i-r8-chip sun6i-a31-app4-evb1 sun7i-a20-cubieboard2 sun7i-a20-olinuxino-lime2 sun7i-a20-olinuxino-micro sun8i-a23-evb sun8i-a33-olinuxino sun8i-a33-sinlinx-sina33 sun8i-a83t-allwinner-h8homlet-v2 sun8i-a83t-bananapi-m3 sun8i-h2-plus-bananapi-m2-zero sun8i-h2-plus-libretech-all-h3-cc sun8i-h2-plus-orangepi-r1 sun8i-h2-plus-orangepi-zero sun8i-h3-libretech-all-h3-cc sun8i-h3-orangepi-pc sun8i-r40-bananapi-m2-ultra synquacer-acpi synquacer-dtb synquacer tc2 tegra124-nyan-big thunderx upsquare vexpress x15-bl x15 x86-atom330 x86-celeron x86 x86-pentium4 x86-x5-z8350 xilinx-zcu102

Remote Labs

The LAVA Server and associated Worker(s) can optionally be physically located in different places

Multiple Workers for an instance can be distributed in multiple locations. Each group of Workers is called a **Remote Lab**.

LAVA server stores the test results and hosts the web interface for all the distributed Workers and their associated DUTs. It appears as a single instance.



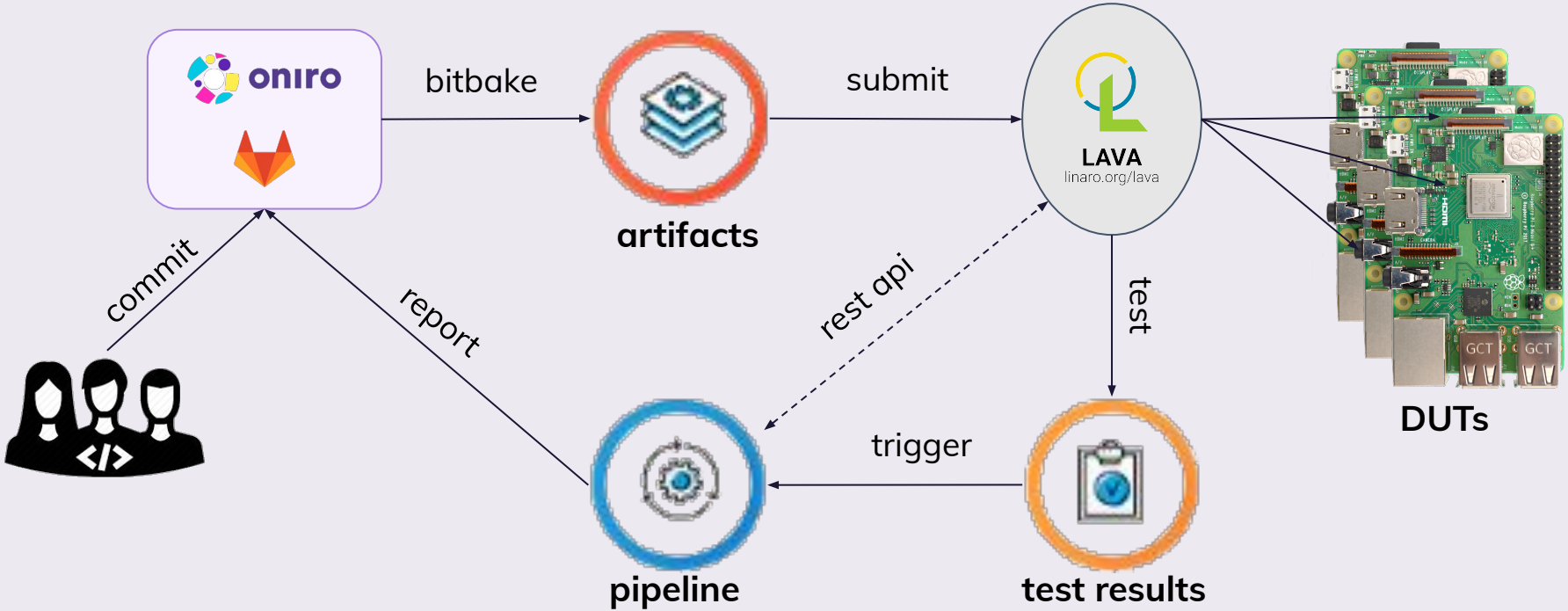
Utilizing remote labs in Oniro

- DUT management in the hands of originators/vendors
- Don’t need to educate central lab personnel on every board from every vendor
- No hardware shipping/return cycle with problematic board debug
- No hardware maintenance by lab personnel/reduces cost
- Decentralization: each member/contributor can add physical devices and different locations
- Sharing: Device added under testing can be shared via public cloud infrastructure
- Scalability: Each site can add one to hundreds of devices

Oniro LAVA deployment

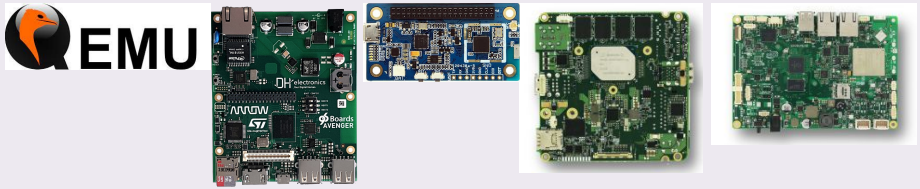
- IAC
- Server in a cloud: https://lava.ostc-eu.org/
- Worker provisioning streamlined
  - Installation, configuration
- Upgrades
  - Automatic upgrades of remote labs based on server version
  - No upgrade downtime
- Remote lab deployment (Warsaw, Belgrade, Shanghai)
- Supported devices
  - Qemu
  - **RPi4**, Nitrogen, Arduino Nano BLE 33
  - **Seco B68 & C61**

Oniro CI/Testing



Oniro CI/Testing explained

- Push MR, build artifacts
- Submit LAVA test jobs via CI pipeline
- Test
- Trigger the manual CI pipeline from LAVA to feed results back to Gitlab
- Report test results back to MR
- Profit



Q/A

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Thank you!

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