

# Lustre on Arm and openEuler

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# Agenda

- Lustre on Arm64 Status
- Lustre on openEuler Status
- Future Plan

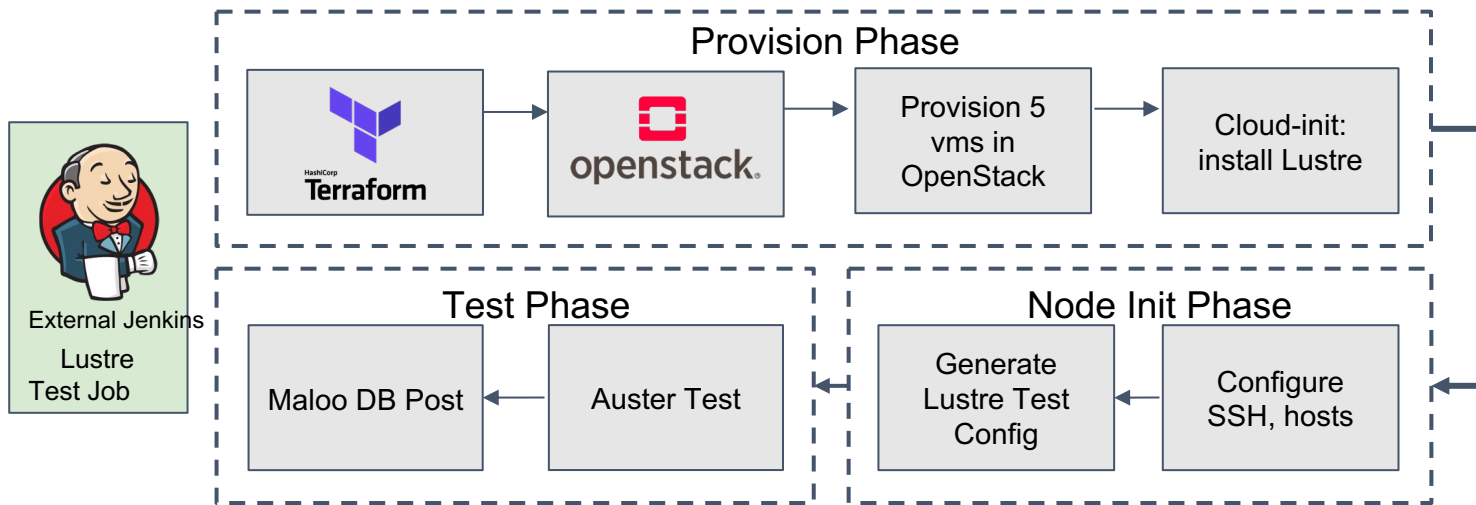
# Lustre on Arm64 Status

# Lustre on Arm64 Status – Arm64 CI

## Lustre upstream community Arm64 CI

- Only Arm64 client test
  - El8 x86\_64 server end test with el8 Arm64 client.
  - Run basic sanity test suites per gerrit change.
- Need a complete Arm64 CI
  - Test both Arm64 server and client end.
  - Run full test suites.
  - Suggested an external Arm64 CI.

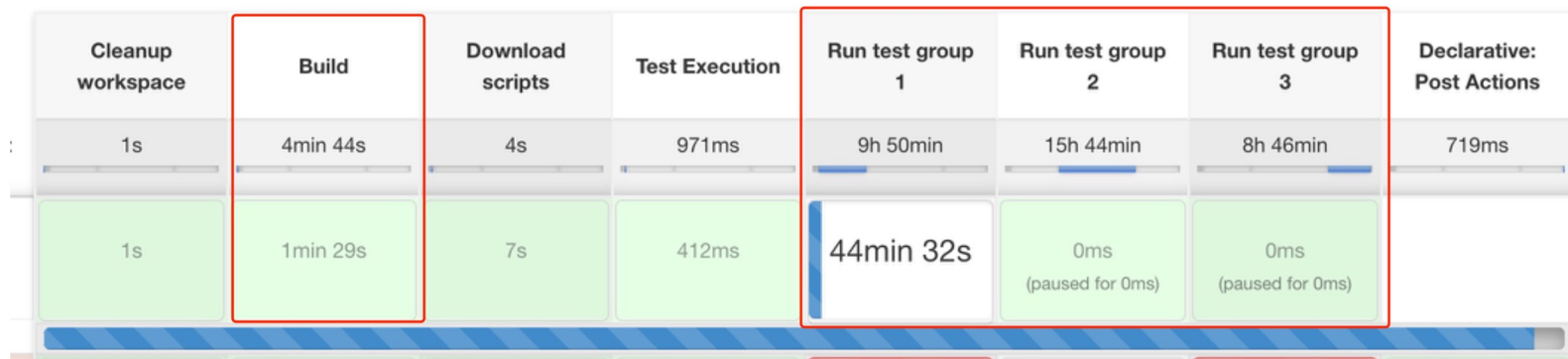
# Lustre on Arm64 Status – Arm64 CI



## CI Solution Inside

- **Provision Phase:** set up a 5 nodes cluster: 2 clients, 2 MDS, 1 OSS.
- **Node Init Phase:** set up test environment: ssh, multinode.sh.
- **Test Phase:** Run Auster and upload the data to Maloo DB.
- CI page: <http://213.146.155.72:8080/>
- Source code: <https://github.com/Linaro/lustretest/>

# Lustre on Arm64 Status – Arm64 CI



## CI Daily Test Pipeline

- One test pipeline per OS: RockyLinux el8, el9, openEuler 20.03, 22.03
- **Build:** Test master, v2.15 LTS.
- **Run test group**
  - Parallel run: linaro-full-part-1, linaro-full-part-2, linaro-full-part-3



# Lustre on Arm64 Status – Arm64 CI

## Test suites run

- Linaro-full-part-1
  - recovery-small, ost-pools, pjdfstest, sanity-lnet, mds-survey, sanity-dom, mmp, sanity-flr, replay-dual, runtests, metadata-updates, large-scale, replay-ost-single, obdfilter-survey, sanity-scrub
  - Total tests: **825**; Failed total: 2/825, **0.2%**; Skipped total: 4/825, 0.5%.
- Linaro-full-part-2
  - sanity, sanity-pcc, sanity-quota, parallel-scale-nfsv3, replay-vbr, sanity-sec, lustre-rsync-test, sanity-hsm, lnet-selftest
  - Total tests: **1283**; Failed total: 4/1283, **0.3%**; Skipped total: 14/1283, 1.1%.
- Linaro-full-part-3
  - sanityn, insanity, replay-single, sanity-benchmark, sanity-pfl, sanity-lfsck, parallel-scale-nfsv4
  - Total tests: **597**; Failed total: 3/597, **0.5%**; Skipped total: 3/597, 0.5%.
- <https://github.com/Linaro/lustretest/blob/main/lustretest/cfg/test-groups.yaml>

# Lustre on Arm64 Status – Arm64 CI

## Download Arm64 rpms

- <https://www.lustre.org/download/>

### Lustre RPM Packages

Lustre is available in RPM package form for a number of platforms.

- [Most Recent Lustre Release](#)
- [All Lustre Releases](#)

For servers, Lustre-specific e2fsprogs RPM packages are required.

- [Most recent Lustre-specific e2fsprogs](#)

### Arm support

Linaro hosts builds for the latest [Lustre](#) and [e2fsprogs](#).

[../](#)  
[el8/](#)  
[el9/](#)  
[oe2003sp3/](#)  
[oe2203sp1/](#)  
[oe2203sp2/](#)

13-Jun-2023 01:39  
31-Jul-2023 08:12  
16-Aug-2023 09:06  
19-Jun-2023 15:47  
18-Jul-2023 17:04



# Lustre on Arm64 Status – Bugfix

## Server end critical issues

- Fixed and merged
  - [LU-15293](#) build: Add build support for arm64 centos8
  - [LU-15122](#): ASSERTION( iobuf->dr\_rw == 0 ) crash
  - [LU-15412](#): sanity test 807 get stuck
  - LU-15364: Kernel oops when stripe on Arm64 multiple MDTs
  - LU-15978: fix striped directory deletion fails for 64K PAGE\_SIZE
  - LU-15722: fix write stuck for 64K PAGE\_SIZE
- To be addressed(occur occasionally in io500 test)
  - [LU-16246](#): NULL pointer at lod\_lookup+0x24/0x38
  - [LU-16245](#): ASSERTION( iobuf->dr\_elapsed\_valid == 0 )

# Lustre on Arm64 Status – Bugfix

## Other test suites failed tests

- Fixed and merged: sanity, sanityn
  - [LU-16042](#): can not get cache size on Arm64
  - [LU-11787](#): Fix checkfilemap tests for 64K page
  - [LU-11597](#): Fix sanityn 16a failed on arm
  - LU-11667: Fix sanity test 317 for 64K PAGE\_SIZE OST
  - LU-11596: Fix and re-enable sanity grant test for ARM
  - LU-16275: Modify killall of replay-dual 25
  - LU-11785: fix conf-sanity/98 mount check on 64K page
- To be addressed(Failed tests)
  - Conf-sanity(41c), sanity-lfsck(9a), sanity-pcc(7a, 7b)
  - Performance tests: performance-sanity.
  - Recovery tests: recovery-small, replay-single, replay-dual ...

# Lustre on Arm64 Status - Summary

## Arm64 status summary

- Some vendors have already verified Arm Client years ago
- Arm64 CI pass ~95% tests on master/v2.15 (vm, ldiskfs, tcp)
  - Pass all the sanity, sanity test suites
  - Few failed tests to be fixed for other test suites
- Verified Lustre server/client on OSes:
  - el8, el9, openEuler 20.03, 22.03
- Run IO500 test on small cluster (Kunpeng, ldiskfs, zfs, ib)
  - Arm64 is par with x86
- Time to verify/adopt Arm Lustre on production environment
- Arm64 build and test doc
  - <https://docs.qq.com/doc/DR2FEEdGdVY3Branl3>

# Lustre on openEuler Status

# Lustre on openEuler Status - Enablement

## OpenEuler 22.03 LTS upstream support

- [LU-16322](#): add client build support for openEuler (Merged)
- [LU-16481](#): add server support for openEuler (Merged)
- OpenZFS build support for openEuler (Merged)
  - <https://github.com/openzfs/zfs/pulls?q=is%3Apr++is%3Aclosed+openeuler>
- e2fsprogs
  - [LU-16337](#): build rpms support for openEuler (Merged)
- [LU-16824](#): add server support for openEuler 22.03 LTS SP1 (Merged)
- LU-16976 ldiskfs: add support for openEuler 22.03 SP2 (Merged)

# Lustre on openEuler Status - Enablement

## OpenEuler 20.03 LTS upstream support

- [LU-17028](#) ldiskfs: add support for openEuler 20.03 LTS (Reviewing)
- [LU-17052](#) libcfs: fix build for old kernel (Merged)
- [LU-17027](#) target: include linux/file.h (Merged)
- E2fsprogs (Merged)
  - [LU-17028](#) build: add support for openEuler 20.03 LTS
- Derived OS support, like KylinOS (Reviewing)
  - [LU-17029](#) lustre.spec.in: match rpm macro openEuler for openEuler Linux



# Lustre on openEuler Status - RPM release

## OpenEuler 22.03 LTS SP2 cycle

- [PR-123](#): Kmod build fixed
- [STOR-180](#): zfs rpm pkgs on openEuler
  - openEuler Master only
  - V2.1.10 stable release
  - Backport openEuler build support patches
- [STOR-179](#): e2fsprogs rpm pkgs on openEuler
  - openEuler Master only
  - V1.46.5.wc1 with backport openEuler build support patches
  - Multi-version rpm separated from existing e2fsprogs
- [Ticket #I6T8OP](#): Lustre client rpm
  - V2.15.2 stable release
  - With backport openEuler support patches
  - <https://repo.openeuler.org/openEuler-22.03-LTS-SP2/EPOL/main/aarch64/Packages>

# Lustre on openEuler Status - RPM release

OpenEuler 22.03 LTS SP3 cycle (Working on)

- E2fsprogs
  - V1.47.0 with Lustre patches
  - Multi-version rpm to original e2fsprogs
- [Ticket #I80F3Y](#): both Lustre server and client rpm
  - V2.15.3 stable release
  - With backport openEuler support patches
  - Will be released in 2023-12

# Future Plan

# Future Plan

- Release openEuler Lustre server rpm in 2023-12
- Keep maintaining Arm64 CI fixing new building issues
- Keep fixing remain failed tests
- Try advanced features on Arm
  - Caching: Lustre Persistent Client Cache, Metadata Write Back Cache
  - Erasure Coding
  - Compression and Encryption
- Support partners to adopt Lustre on Arm

# Thank you

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