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SOFTWARE SUSTAINABILITY & STEWARDSHIP CI UPDATE

James Willenbring

Department 1424, Sandia

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OUTLINE

- Summary of Software Stewardship CI
- FY25 CI plans
- Trilinos-specific Software Stewardship CI
 - Relationship to Trilinos CI testing modernization effort



SUMMARY OF SOFTWARE STEWARDSHIP CI



- Key objectives of the Software Stewardship effort include
 - Improving productivity and efficiency
 - Moving services and processes to higher levels where appropriate
- Current Software Stewardship CI activity levels:
 - Spack
 - E4S
 - Product Family/SDK
 - xSDK, DAV SDK
 - Product level
- The CASS Integration Working Group is focused on CI for FY25
- FY24 included mostly transitioning from ECP and “keeping the lights on”

FY25 CI PLANS



- Coordinate efforts between CASS/PESO and HPSF
- Targeted CI improvements for product-family-specific efforts
 - Cannot do everything, so select clear deliverables
 - Migrate from DAV Spack meta-package to using Spack environments
 - Baseline the status of CI testing for NNSA codes
 - Provide community testing for common tools product dependencies
 - Develop Spack packages and CI testing for workflows products
 - Integrate xSDK CI into Spack and/or E4S CI
 - Establish facility testing for internode runtime products
 - Establish facility and Frank automated testing for on-node programming products
- Increase use of U Oregon's Frank resource
 - Demand may exhaust resources

TRILINOS-SPECIFIC SOFTWARE STEWARDSHIP CI



- 9 nightly builds currently running on the U Oregon “Frank” systems
- Coverage for 3 GPU vendors
- Developed under an ECP-era contract with Paratools
- Very minimal recent progress, but builds continue to run

https://gitlab.e4s.io/uo-public/trilinos/-/pipelines/19751/

Getting Started Container Registry ... spack-working-grou... Elicit: The AI Resear... Foreign Travel Flow ... International Travel ... ECP Foreign Travel ...

Explore

Search or go to...

uo-public / Trilinos / Pipelines / #19751

retry: 2 [ci skip]

Passed Administrator created pipeline for commit f6cd1423 14 hours ago, finished 13 hours ago

For master

Scheduled latest 10 jobs 32 minutes 3 seconds, queued for 1 seconds

Pipeline Jobs 10 Tests 0

Group jobs by Stage Job dependencies

Prep

- Trilinos-Commit

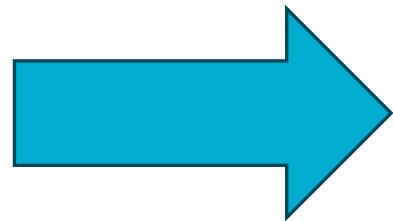
Test

- AMD-MI50
- AMD-MI100
- AMD-MI210
- INTEL-A770
- INTEL-DATA-CENTER-MAX-1100
- NVIDIA-A100
- NVIDIA-A2000
- NVIDIA-GH200
- NVIDIA-H100

TRILINOS-SPECIFIC SOFTWARE STEWARDSHIP CI



- Tests cover a small fraction of Trilinos packages
- Stable baseline for adding more or for leveraging this work for more comprehensive testing



```
2861 100% tests passed, 0 tests failed out of 432
2862 Subproject Time Summary:
2863 Amesos2    = 12.97 sec*proc (9 tests)
2864 Ifpack2    =  2.54 sec*proc (2 tests)
2865 Tpetra     = 441.54 sec*proc (264 tests)
2866 Zoltan2    = 475.68 sec*proc (157 tests)
2867 Total Test time (real) = 289.87 sec
2868 $ find . -type f -name LastTest.log -exec cp {} $ARTIFACTS/LastTest.log \;
2869 $ exit $RC
✓ 2870 Uploading artifacts for successful job
2871 Uploading artifacts...
2872 artifacts: found 4 matching artifact files and directories
2873 WARNING: processPath: artifact path is not a subpath of project directory: /Trilinos/spack-configure-args.txt
2874 WARNING: processPath: artifact path is not a subpath of project directory: /Trilinos/spack-build-01-cmake-out.txt
2875 Uploading artifacts as "archive" to coordinator... 201 Created id=324923 responseStatus=201 Created token=glcibt-64
✓ 2876 Cleaning up project directory and file based variables
2877 Job succeeded
```

RELATIONSHIP TO TRILINOS CI TESTING MODERNIZATION EFFORT



- Modernization effort has several focuses, including the ability to run tests outside of Sandia
- Frank cluster provides access to many GPUs of interest for CI and other testing
 - Initially non-blocking builds
- Non-GPU resources can also be used to expand who can initiate testing for existing builds and reduce load on Sandia machines
 - Improve community for Trilinos developers
- Containerization is key to consistency for tests at multiple sites
- Remaining questions include:
 - Which dashboard will tests post to? Will there be multiple dashboards?
 - Will there be enough resources to run all builds at PR time?
 - What will be the workflow for debugging errors on non-PR initiated builds?
- Some NNSA integration funding available to prototype use of Frank for CI product builds