Trilinos Performance Dashboard

• Purpose
  • Automated plotting of Trilinos solver and kernel performance over time
• Developed by Geoff Danielson, Brian Kelley, and Elliott Ridgway
• Tests Trilinos develop VOTD

• Tpetra team reviews dashboard at its weekly Tuesday meeting
Trilinos Performance Dashboard

• **Platforms**
  • Intel CPUs
  • ARM
  • NVIDIA and AMD GPUs

• **Algorithms**
  • Belos (CG)
  • Tpetra (FE assembly, SpMV, SpGEMM)
  • MueLu (SA AMG setup and solve)
  • Panzer MiniEM (Maxwell solver)
  • Ifpack2 (ILU)
    • Application matrices important to Sierra/Aria
Trilinos Performance Dashboard

Trilinos Performance Dashboard

- Jenkins for automation
- Uses Watchr library for plotting
  - [https://github.com/sandialabs/watchr-core](https://github.com/sandialabs/watchr-core)
- Runs tests in Cmake `PERFORMANCE` testing group
A Success Story

- Sept. 14 (Wedn.) regression introduced to Aria test
- Sept. 20 (Tues.) issue noticed at weekly meeting
- Sept. 28 (Wedn.) PR merged and regression fixed
- Sept. 30 (Friday) 2nd PR yields 2x improvement

- Issue fixed before downstream appl was impacted
- Fixing this led to discovery of further 2x optimization
Future Plans

• Include more application matrices
  • Xyce
  • Sierra SD
  • Open to other apps!

• Incorporate automated regression detection
  • Assessing work done by J. Watkins et al. (see his 2021 TUG talk, “Automated Performance Testing and Tuning”)