BPF CI

LSF/MM/BPF 2023->2024

Manu Bretelle - LSF/MM/BPF 2024

Need for speed - Overview

- 4 areas of work
  - Decoupling workflows per architectures
  - Cross-compilation for s390x
  - S390x optimization #1
  - New s390x workers

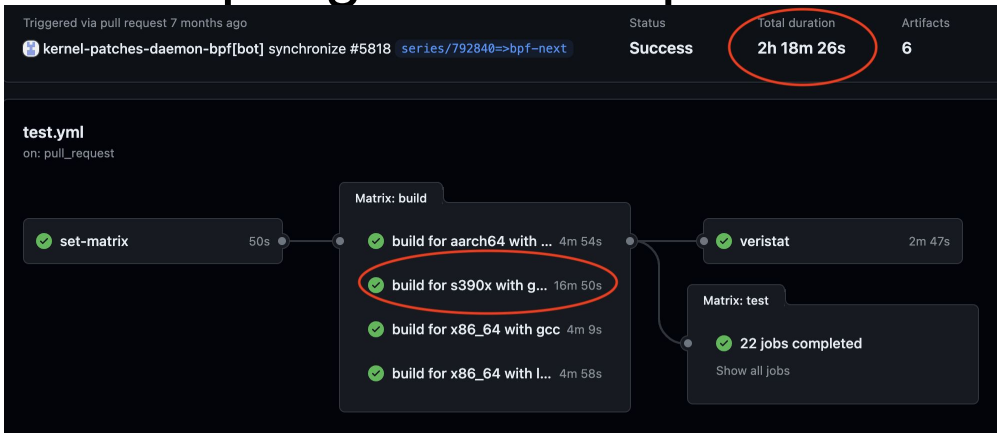
Need for speed - Decoupling workflow per arch

Nov 2023

Initially workflow was

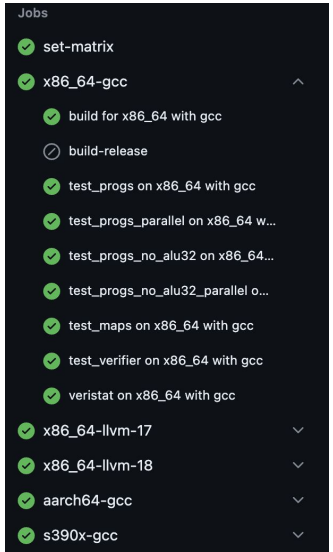
1. Build for each arch/compiler
2. Run tests

1 slow arch impact all others



Now

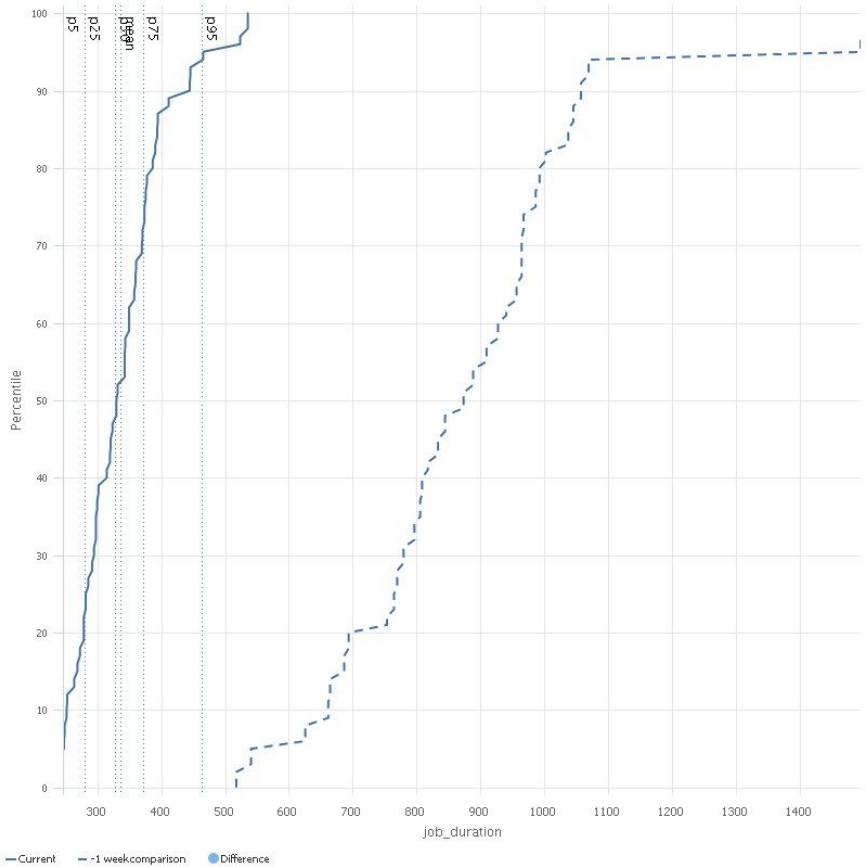
- Build are spawn independently
- As soon as build for arch/compiler done, start tests
- Improved end-to-end duration (build + tests) for x86/arm
  - P90 x86/arm from 15min down to 10min (s390x workers not backed up)
    - ~5 min build + ~5 min test run
  - Up to hours when s390x workers were backed up
  - Screenshot shows saving of 12min, not accounting wait time for workers to be avail



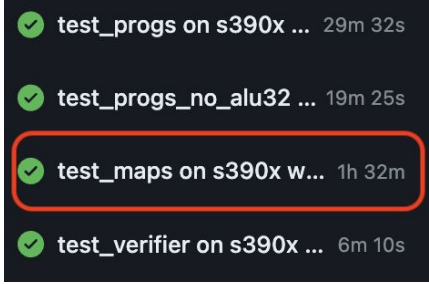
Need for speed - Cross-compilation for s390x

Mid Feb 2024

- [cross-compile s390x BPF and selftests]
- P90 s390x build time from 17.5min to 7.5
- P99 now: 534s
- P1 before: 516s
- Move load to x86_64 workers
  - Easier to scale… instances++
  - More s390x workers for testing



Need for speed - s390x “optimization”



Mid Feb 2024

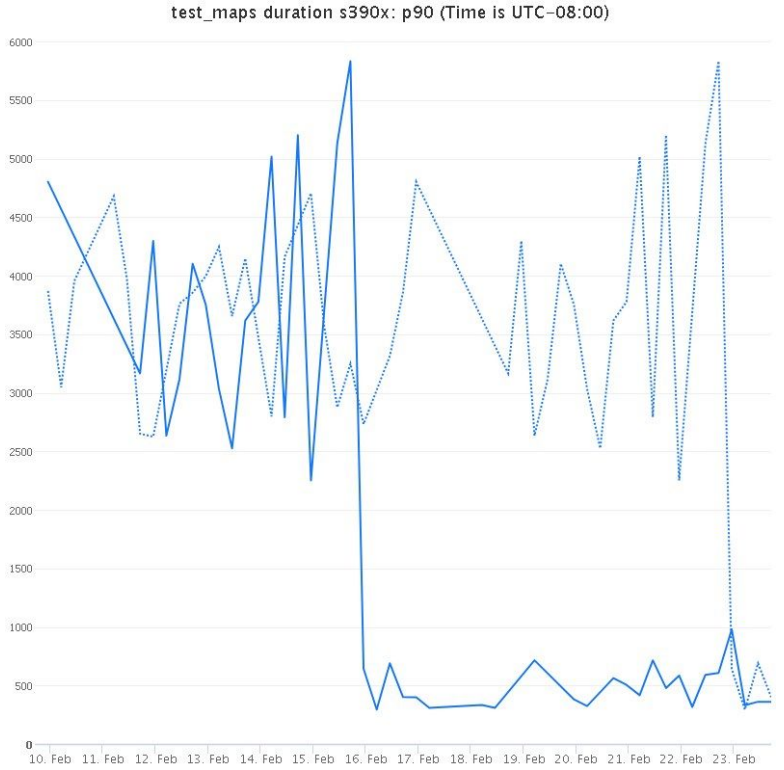
Problem: s390x extremely slow to run test_maps

- P90 ~50min
- S390x hosts run LPAR+z/VM+KVM
- No perf issue with LPAR+KVM+KVM
- Flamegraph of test_maps identified lockdep

Disabled lockstep for s390x

P90 50min -> 5min

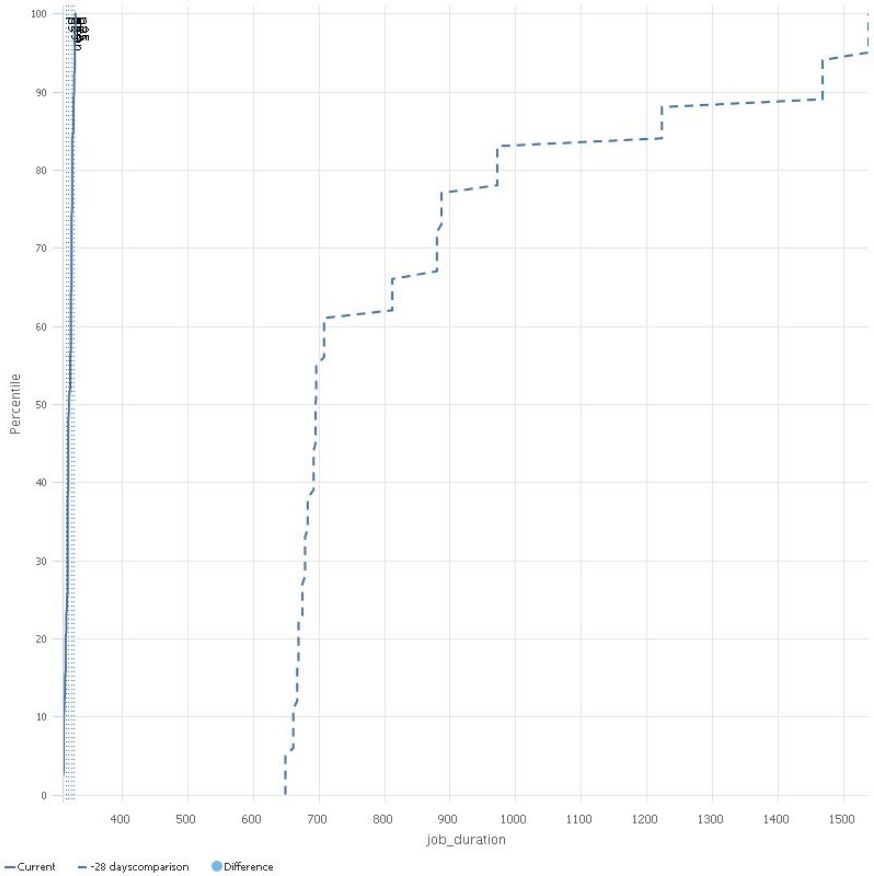
Credits: Ilya Leoshkevich



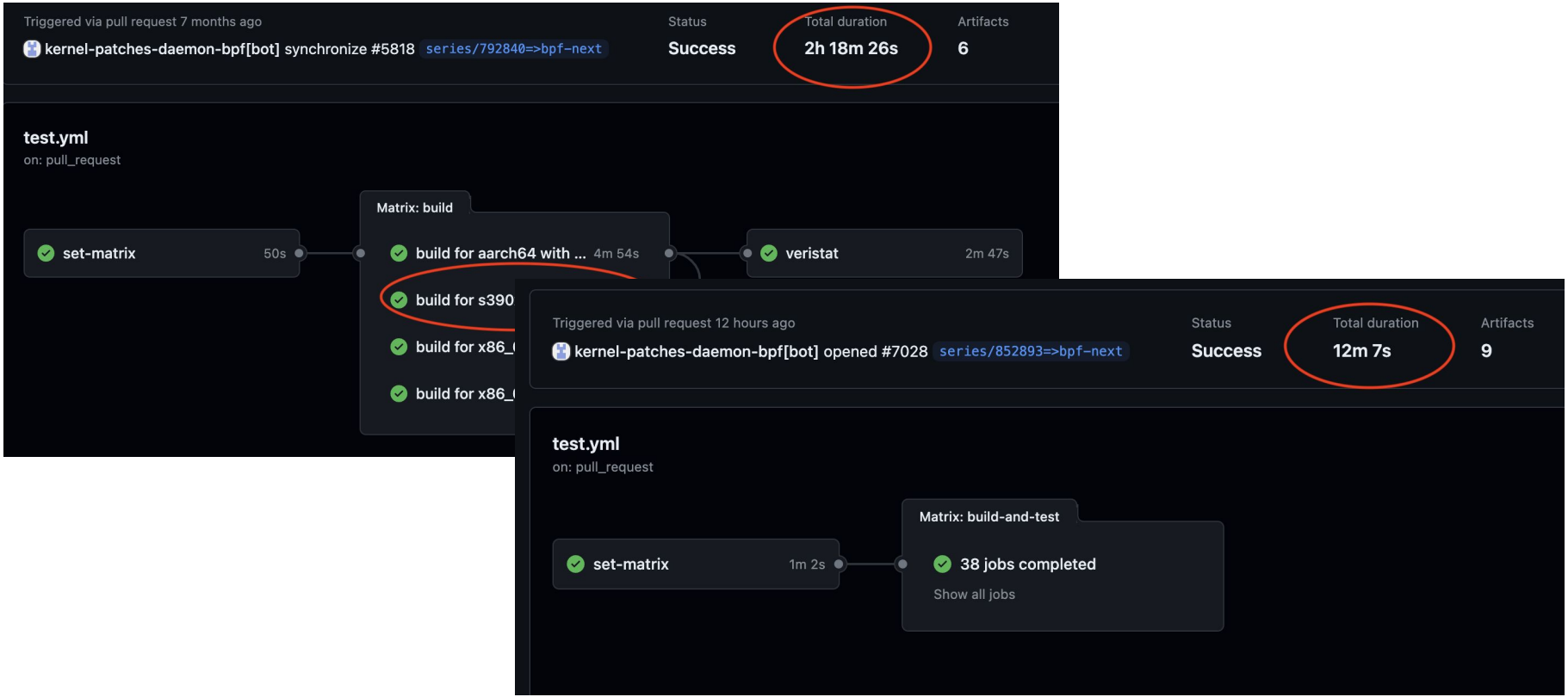
Need for speed - New s390x workers

Mid Apr 2024

- New s390x runner w/ LPAR+KVM+KVM
- Test_progs p90 20min -> 5 min
- Thanks Ilya



Need for speed - Summary



Simplified VM setup

Late Jan 2024

- LSFMMBPF 2023: vmtest: reusable virtual machine testing infrastructure - Daniel Xu
- Moved from bespoke rootfs to danobi/vmtest
- Build in container, run test in VM using same filesystem
  - Eliminate the need to build a rootfs for the VM for each tests
    - Download rootfs/untar
    - Copy artifacts in
    - Copy results out
  - No need to maintain a builder FS and VM rootfs (which was unmaintained)
  - No need to maintain custom qemu incantation
  - Eliminate issues where build host libraries (Ubuntu 20.04) != VM libraries (Debian bullseye)
- Opportunities to re-use this logic for local development/troubleshooting
- Amplified class of issues relying on predictable task scheduling
  - “&>” is a bash thing, dash would put the command in the background: https://lore.kernel.org/bpf/20240127025017.950825-1-martin.lau@linux.dev/
    - Likely fixed multiple flaky test with one stone
  - ICMPv6 racing ping: https://lore.kernel.org/all/20240131053212.2247527-1-chantr4@gmail.com/

Other goodies

- Sept 2023: Veristat against Meta bpf objects
  - Wider set of verifier validation/regression test
- Dec 2023: Release build (-O2) on x86_64 with LLVM
  - Catches regression with uninitialized var and such