FLANG UPDATE

Steve Scalpone, LLVM Developers' Meeting, October 23, 2019

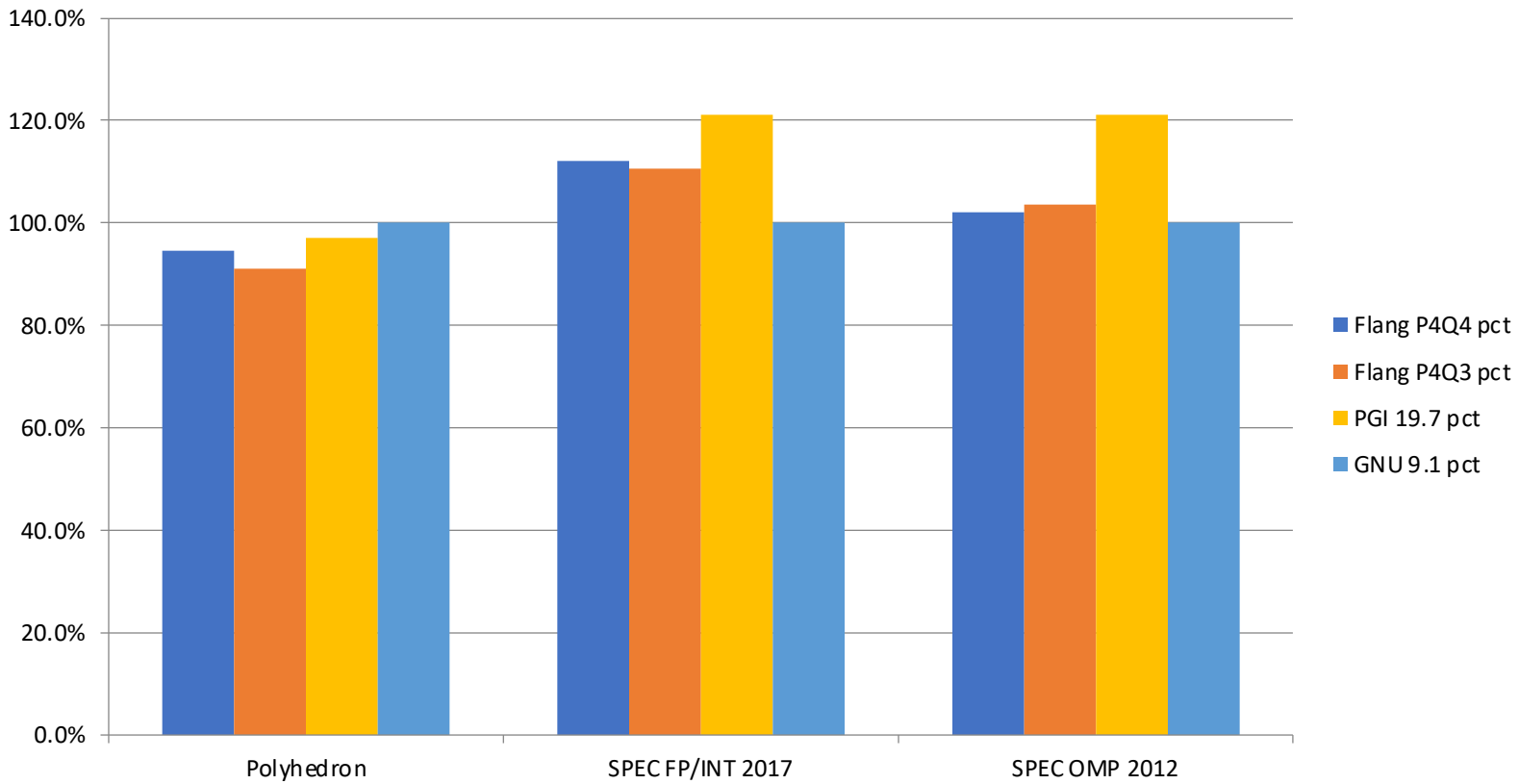
THE FLANG PROJECT

Now affectionately known as ”Old Flang”

- A multi-year collaboration between the NNSA labs and NVIDIA/PGI
  - Open-source Fortran compiler since May 2017
  - Arm and AMD are shipping compilers built using Flang
  - Wide variety of contributors; most recently Microsoft signed the CCLA
- The end of the CLA
  - No longer require a CCLA or CLA to contribute
  - Adding Arm and other community members as committers
  - Relicensing from Apache 2.0 to Apache 2.0 with LLVM Exception

FLANG PERFORMANCE

All runs on dual-socket Intel Xeon Skylake



Performance measured September 2019 and are considered ESTIMATES per SPEC run and reporting rules.
Two 20 core Skylake Intel® Gold 6148 CPU @ 2.40GHz CPUs @ 2.4GHz w/ 256GB memory. SPEC® is a registered trademark of the Standard Performance Evaluation Corporation (www.spec.org).

THE FLANG PROJECT

Some call it “f18” or “new flang”

New Flang compiler was started from scratch

Modern & well-documented design written in C++17

NNSA, ECP, NVIDIA, Arm and others have contributed

It’s an LLVM subproject despite not yet having files in the repo

Developed 100% in open source guided by LLVM coding standards

THE FLANG PROJECT

Using some interesting technologies

- FIR implementation is as an MLIR dialect
  - MLIR replaced the original f18/FIR infrastructure
  - Working with the MLIR team to extend MLIR as needed for FIR
- OpenMP IRBuilder drives language-independent lowering
  - Defining an OpenMP dialect in MLIR
  - Optz and transformations may be in OpenMP IRBuilder, MLIR framework, or LLVM

THE FLANG PROJECT

SOURCE CODE

https://github.com/flang-compiler

MAILING LIST

flang-dev@lists.llvm.org

PROJECT CALL

Every other Wednesday 8:30am Pacific
See the mailing list for details

TECHNICAL CALL

Every other Monday 8:30 Pacific
See the mailing list for details