CAF Performance Test Suite Instructional Guide

Siddhartha Jana, Deepak Eachempati

HPCTools, University of Houston,
Texas, 77004
sidjana,dreachem@cs.uh.edu

The purpose of this guide is to help the reader be familiar with the configuration parameters (detailed descriptions)(Sec 1) and some of the initial performance results of single-node NAS-PB performance results for some CAF compiler implementations [OpenUH(v3.0.x) (over GasNET and ARMCI), Intel(v13.1) and G95(v0.93)](Sec 2).

1 Details of Configuration Parameters

The performance suite comes bundled along with the validation test suite. For this article:

- SUITE_ROOT = the parent directory of the perfomance and validation test suite
- PERFORMANCE_PATH = $SUITE_ROOT/performance/

The installation requires the setup of a few configuration parameters. These parameters can be divided into two types:

1. Generic parameters: These are testsuite specific parameters which can be used to specify the location of the compilation, execution result-dumps. These are located in
   $PERFORMANCE_PATH/support/CONFIG
2. Compiler-specific: These are compiler dependent parameters and can be used to adjust the compiler/execution commands, flags and launcher options. These are located in
   $PEFORMANCE_PATH/support/CONFIG-compiler.¡compiler¿

Table 1 lists the different generic options that need to be set for the test-suite. Table 2 lists the different compiler-specific options that need to be set for the test-suite.

2 Test results

This section outlines the performance comparison of the compilers on a single 4-core machine.

Table 1. List of generic configuration parameters for UH-CAF Performance Test suite

Parameter	Description
DATE	Format of date. This format is used for naming the result logs
TIMEOUT	Timeperiod in seconds for timing-out on executions. Any execution which crosses this limit will be denoted as having *timed-out* in the test-results and log files.
logfile	name-format of the log file. These files store the testsuite results.
TESTS_DIR	Location of the tests
LOG_DIR	location of the log dump
OUTPUT_DIR	Location of the results of compilation and execution of all the tests. All the stdout and stderr are stored in subdirectories in this path.
BIN_DIR	Location of all the executables.
EXEC_OUT_DIR	location of stdout and stderr obtained while execution of the test-binaries.
COMP_OUT_DIR	location of stdout and stderr obtained during compilation of the test-files.
HISTORY_OUT_DIR	location of all the past compilation/execution results.
NITER	Number of iterations for microbenchmark tests that perform repeated runs of the paricular communication patterns.

Table 2. List of compiler specific configuration parameters for UH-CAF Performance Test suite

Parameter	Description
COMPILER	Name of the compiler
FC	Executable name of the compiler to launch the compilation
FFLAGS	Commands to be passed to the compiler at command line
LAUNCHER	Command for launching multiple CAF images.
EXEC_OPTIONS	Command-line options to be passed after the executable name during execution.
COMPILE_CMD	Command format for compilation
EXEC_CMD	Command format for execution

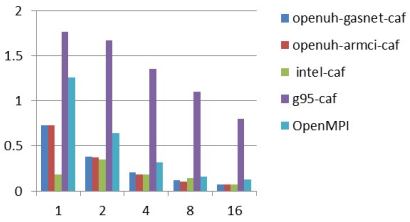

Fig. 1. EP, CLASS=S

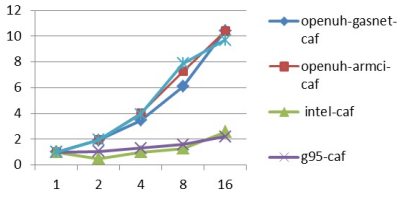

Fig. 2. EP, CLASS=S

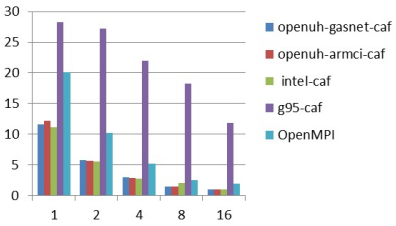

Fig. 3. EP, CLASS=A

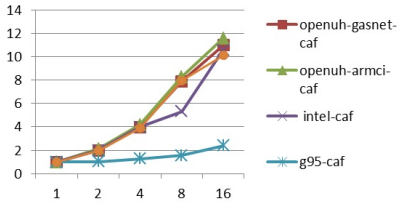

Fig. 4. EP, CLASS=A

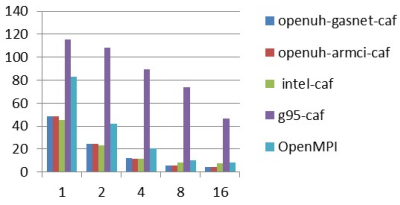

Fig. 5. EP, CLASS=B

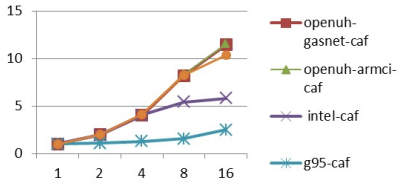

Fig. 6. EP, CLASS=B

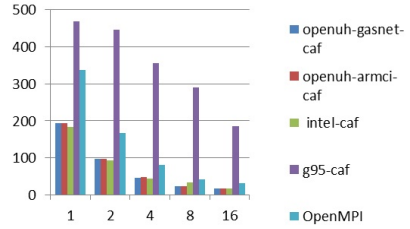

Fig. 7. EP, CLASS=C

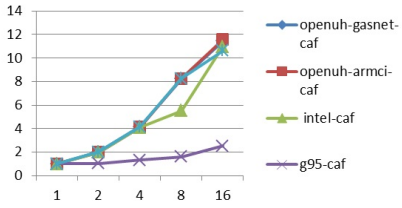

Fig. 8. EP, CLASS=C

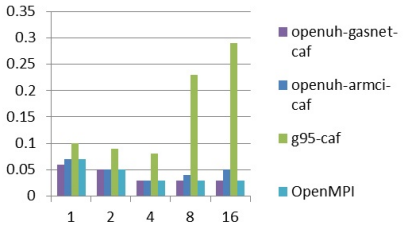

Fig. 9. CG, CLASS=S

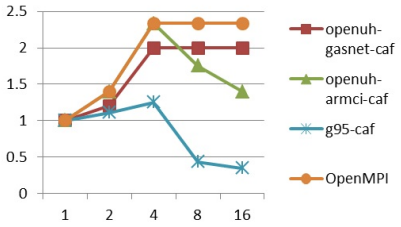

Fig. 10. CG, CLASS=S

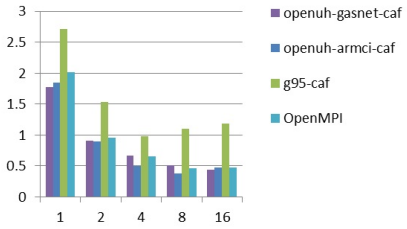

Fig. 11. CG, CLASS=A

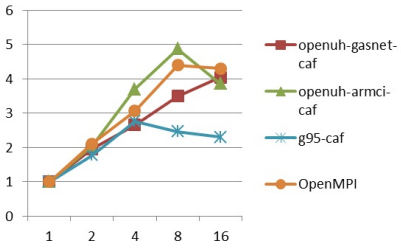

Fig. 12. CG, CLASS=A

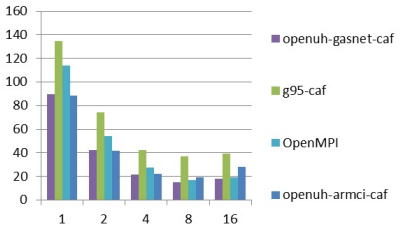

Fig. 13. CG, CLASS=B

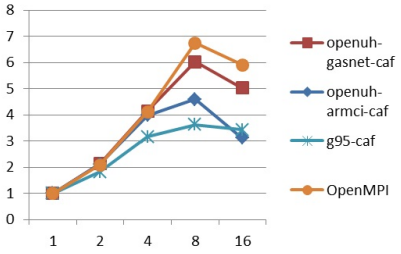

Fig. 14. CG, CLASS=B

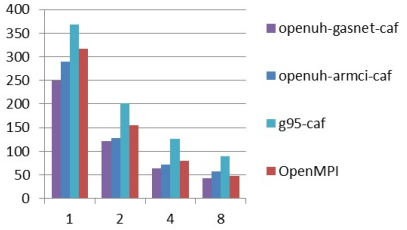

Fig. 15. CG, CLASS=C

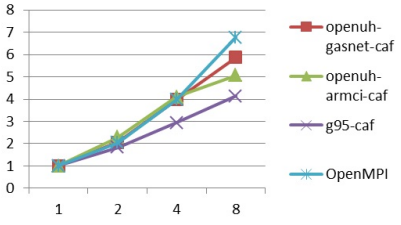

Fig. 16. CG, CLASS=C

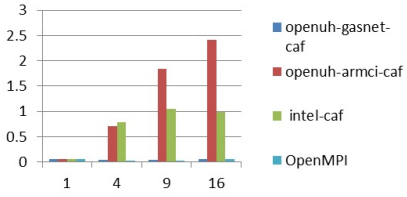

Fig. 17. SP, CLASS=S

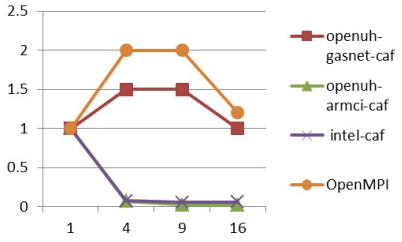

Fig. 18. SP, CLASS=S

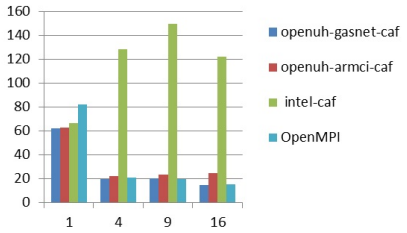

Fig. 19. SP, CLASS=A

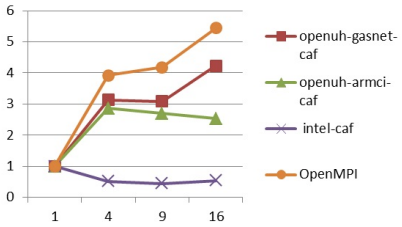

Fig. 20. SP, CLASS=A

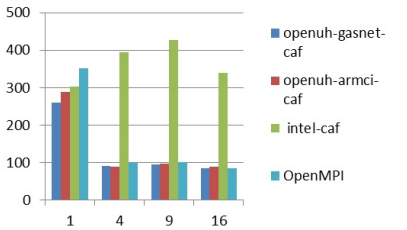

Fig. 21. SP, CLASS=B

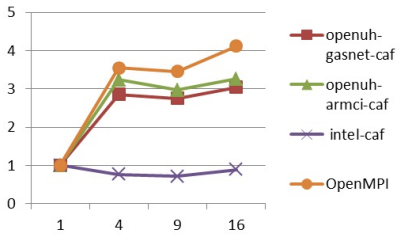

Fig. 22. SP, CLASS=B

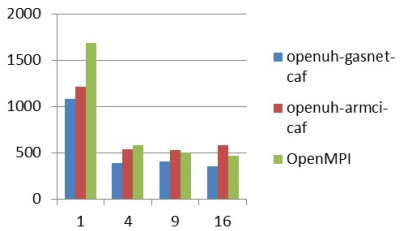

Fig. 23. SP, CLASS=C

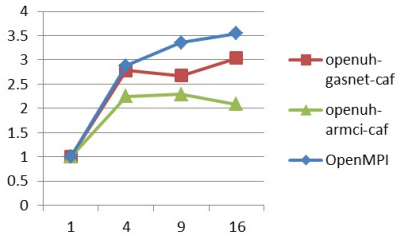

Fig. 24. SP, CLASS=C

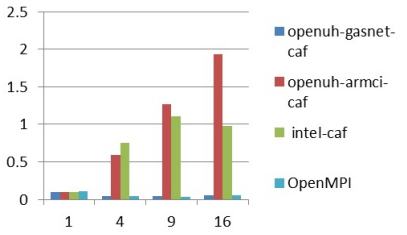

Fig. 25. BT, CLASS=S

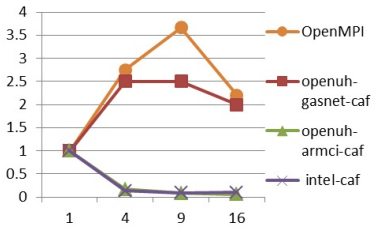

Fig. 26. BT, CLASS=S

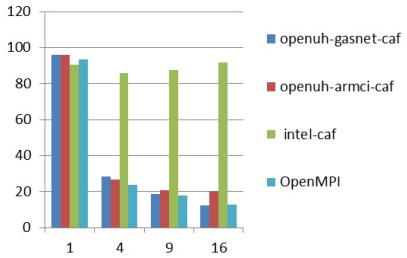

Fig. 27. BT, CLASS=A

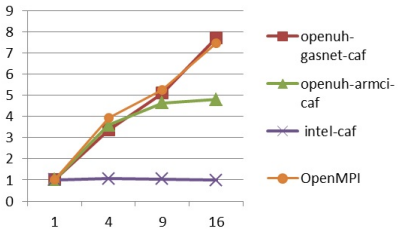

Fig. 28. BT, CLASS=A

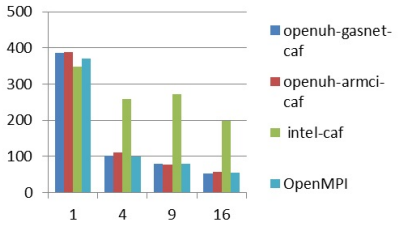

Fig. 29. BT, CLASS=B

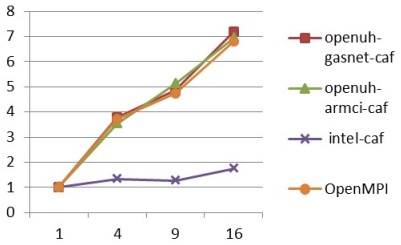

Fig. 30. BT, CLASS=B

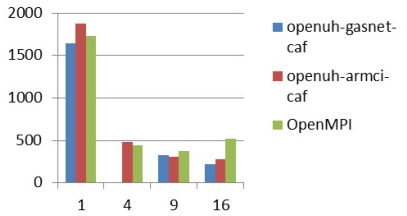

Fig. 31. BT, CLASS=C

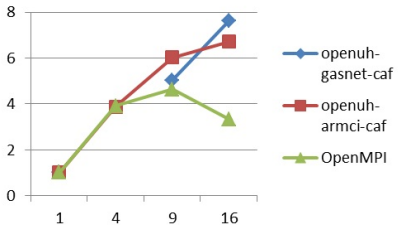

Fig. 32. BT, CLASS=C