Steps for gathering statistics

- First setup your environment
  - module load xtpe-accel-nvidia20
  - module swap PrgEnv-pgi/4.0.30 PrgEnv-cray/4.0.30
  - module swap cce/7.4.3 cce/8.0.1.104
  - setenv PDGCS_ACC_LOOP_HELP on
  - setenv CRAY_ACC_TRUE_AUTO_ASYNC 1
  - limit stacksize unlimited
  - limit memoryuse unlimited
  - limit vmemoryuse unlimited
  - module unload xt-libsci/11.0.04.4
  - module load perftools/5.3.0
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- Compile program as you would routinely
  - With VH1, we created moved the files from PPMLR to Parallel and created a comp.sh to compile all the files
    - sh comp.sh
  - mkdir run, cd into run, mkdir output, copy indat into run, and qsub the following job script
    - #PBS -N VH1
    - #PBS -j oe
    - #PBS -l walltime=0:05:00
    - #PBS -l size=256
    - cd $PBS_O_WORKDIR
    - setenv MPICH_NEMESIS_ASYNC_PROGRESS 1
    - setenv MPICH_MAX_THREAD_SAFETY multiple
    - aprun -n 16 -N 1 -d 14 -r 2 ../vhone

Steps for gathering statistics

- Return to Parallel directory and run pat_build
  - pat_build –u –g mpi vhone
    - This generates vhone+pat
- Return to run directory and edit run_16mpi.pbs
  - aprun -n 16 -N 1 -d 14 -r 2 ../vhone+pat
  - qsub, after execution, you will see a .~~~~.xf file
  - pat_report –T ~~~~.xf > profile_1
    - Also try
  - pat_report –Ocallers ~~~~.xf>profile_1_callers
- Examine profile files

Steps for gathering statistics

- Return to Parallel directory and edit comp.sh to add
  - -h profile_generate to each compile line
  - sh comp.sh
  - pat_build –u –g mpi vhone
- Return to run directory and run run_16mpi.pbs with the executable vhone+pat
  - pat_report –T ~~~~.xf>profile_2
  - pat_report –Ocallers ~~~~.sf>profile_2_callers
- Look at these profiles for loop statistics
- Do not use this instrumented file for production – it will be slow

Steps for gathering statistics

- Return to Parallel directory and edit comp.sh to add
  - -h omp_analyze and remove –h profile_generate
  - Additionally add
    - !dir$ omp_analyze_loops to the outermost loops in sweepx1,sweepy,sweepz and sweepx2
    - sh comp.sh again – this will not generate an executable, look at the files sweepx1.omp_analyze, sweepy.omp_analyze, sweepz.omp_analyze, sweepx2.omp_analyze