

Benchmarking P2C for HPC

Joseph Anthony C. Hermocilla

December 23, 2016

Abstract

We report some benchmarking results of the Peak-Two(P2C) Cloud for High-Performance Computing(HPC) using the NAS Parallel Benchmarks (NPB).

1 Introduction

In order to evaluate the performance of the P2C[1] for HPC, NPB¹ version 3.3.1 was run on a 16-node MPI cluster provisioned using vcluster².

NPB consists of a set of programs that implements different computational approaches associated with Computational Fluid Dynamics(CFD). These programs represent the types of applications that are run in supercomputers and HPC clusters. In running the benchmark, classes A and B were used for each program. Different classes have different problem sizes and parameters which result to different measurements.

2 Results

2.1 Conjugate Gradient

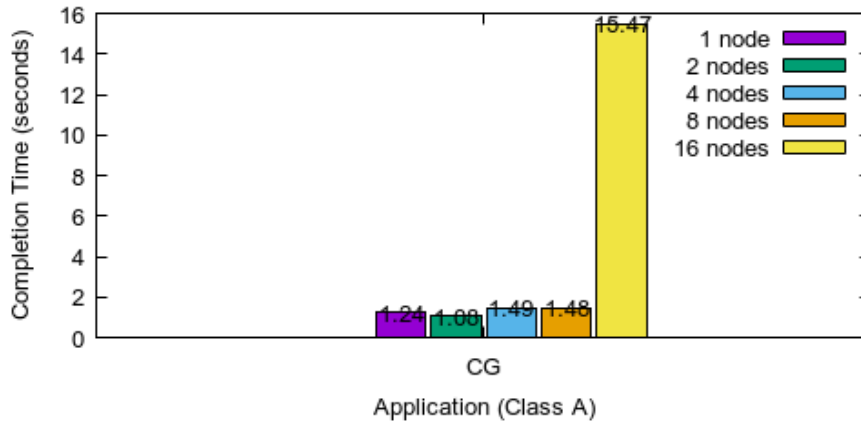


Figure 1:

¹<https://www.nas.nasa.gov/publications/npb.html>

²<http://srg.ics.uplb.edu.ph/projects/peak-two-cloud/peak-two-cloud-resources/deployinganmpicclusterusingvcluster>

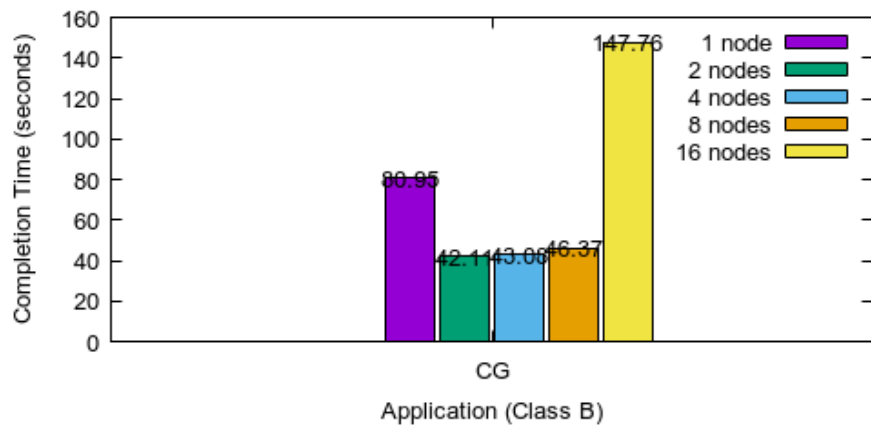


Figure 2:

2.2 Embarassingly Parallel

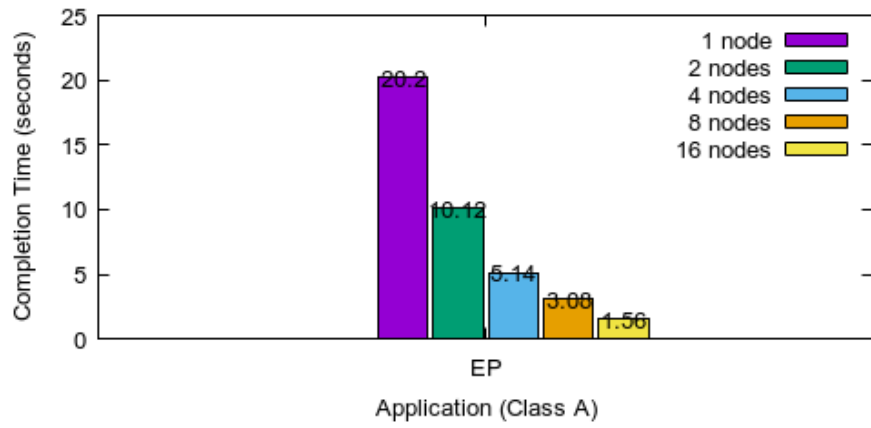


Figure 3:

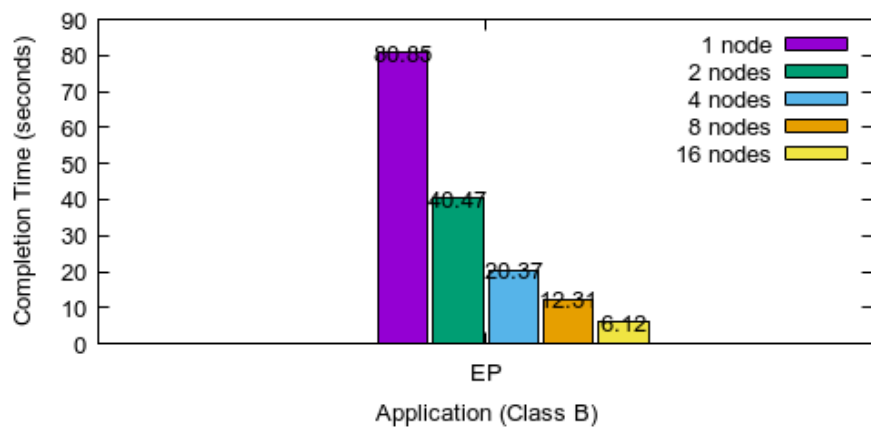


Figure 4:

2.3 Fourier Transform

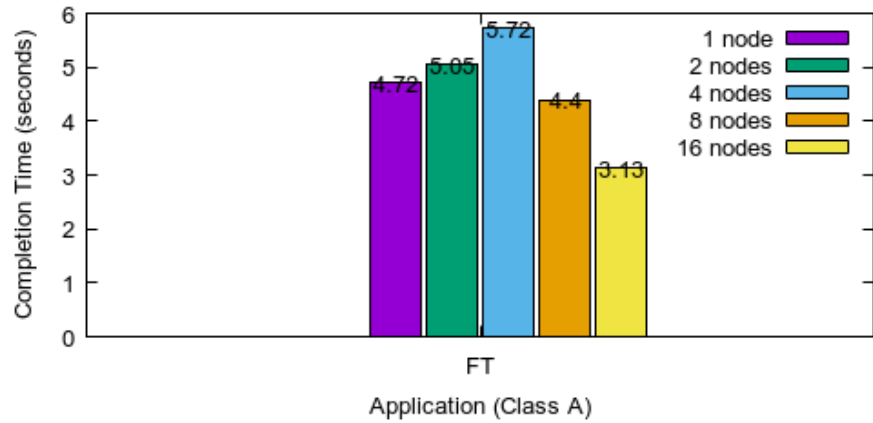


Figure 5:

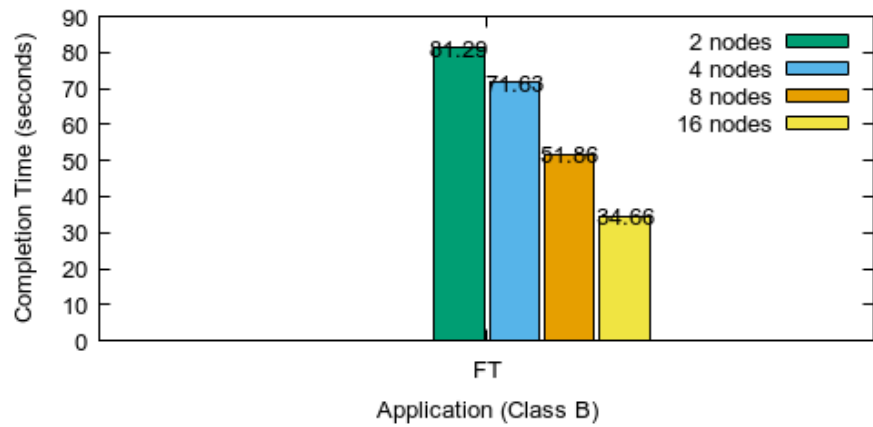


Figure 6:

2.4 Integer Sort

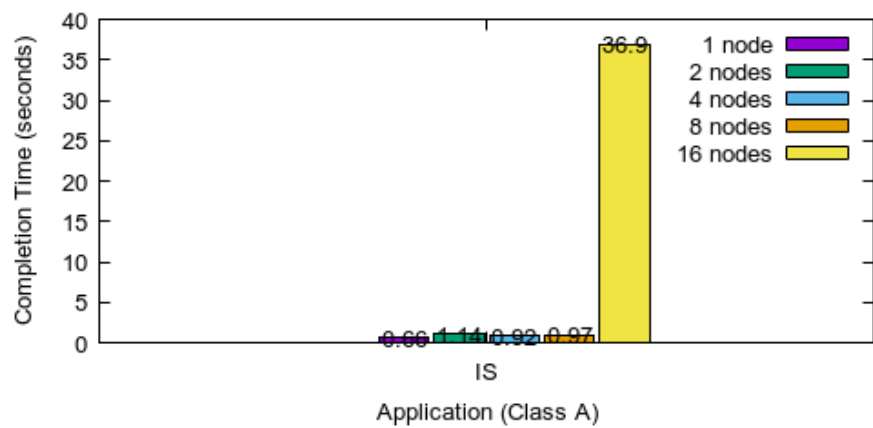


Figure 7:

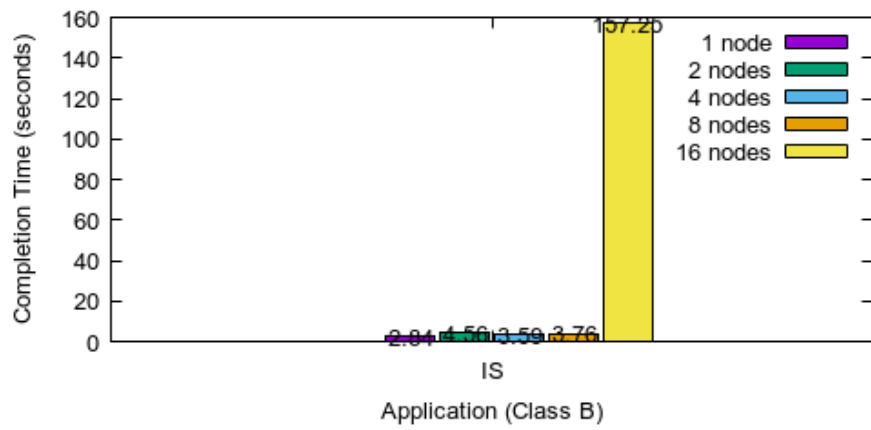


Figure 8:

2.5 Lower-Upper Gauss-Seidel Solver

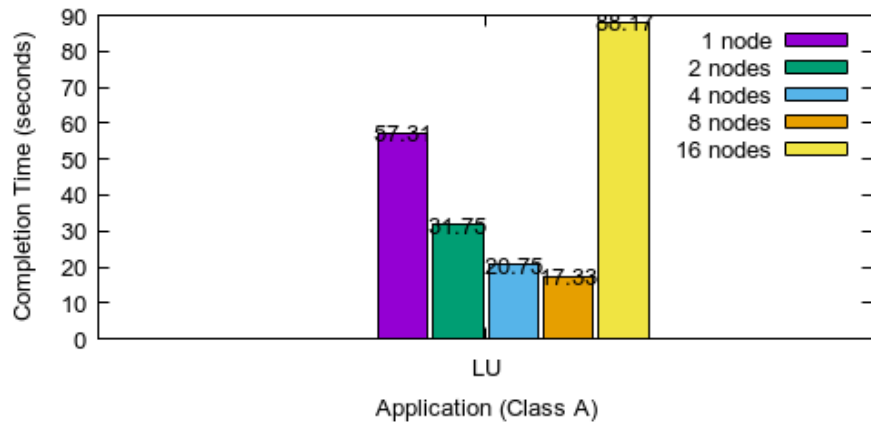


Figure 9:

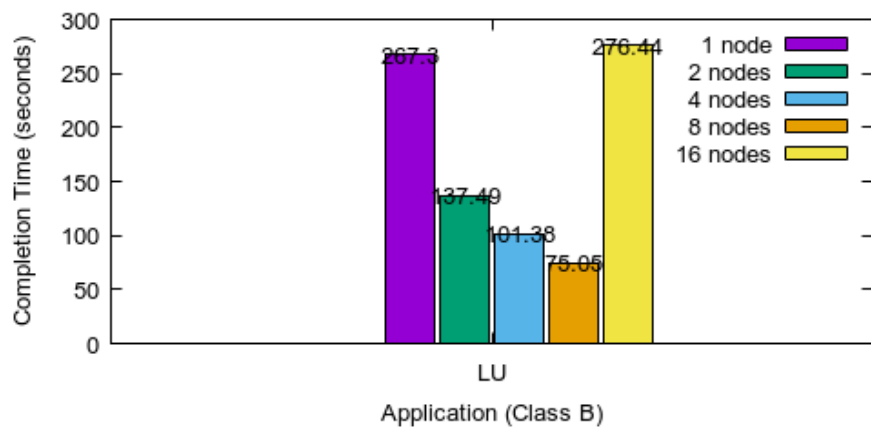


Figure 10:

2.6 Multi-Grid

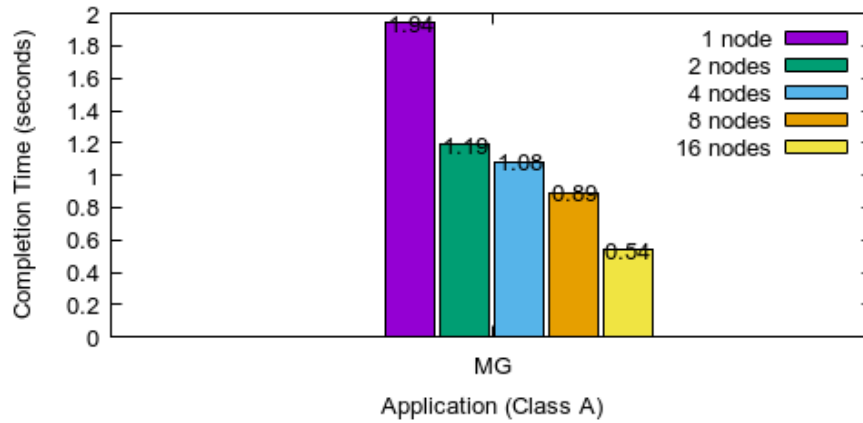


Figure 11:

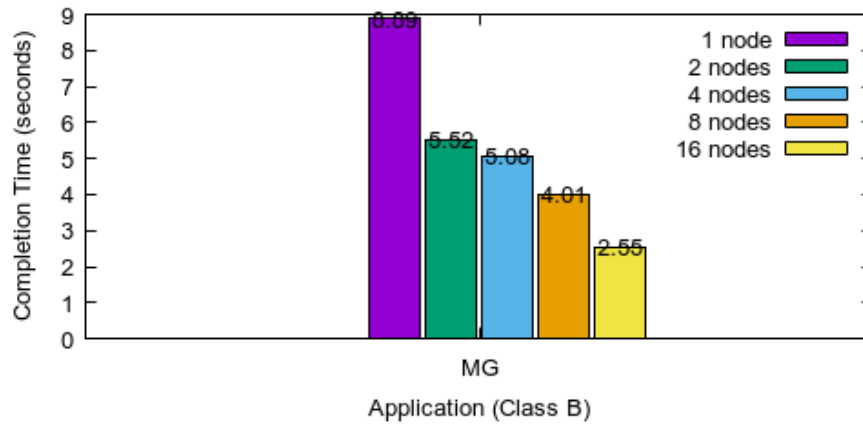


Figure 12:

References

- [1] J. A. C. Hermocilla. P2c: Towards scientific computing on private clouds. In *Proceedings of the 12th National Conference on IT Education (NCITE 2014)*, pages 163–168. Philippine Society of Information Technology Educators, Oct. 2014.