arm
PERFORMANCE
REPORTS

Command: Resources: Memory:

Tasks:

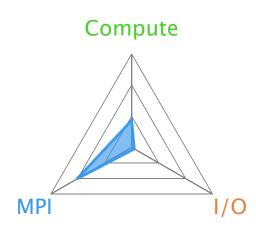
aprun –n 4 ./mandelbrot

1 node (64 physical, 256 logical cores per node) 252 GiB per node

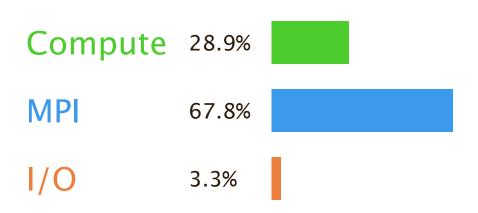
Machine: xcimom2
Start time: Tue Jul 20 11:03:43 2021
Total time: 162 seconds (about 3 minutes)

4 processes

Full path:



Summary: mandelbrot is MPI-bound in this configuration



Time spent running application code. High values are usually good. This is **very low**; focus on improving MPI or I/O performance first

Time spent in MPI calls. High values are usually bad.

This is high; check the MPI breakdown for advice on reducing it

Time spent in filesystem I/O. High values are usually bad.

This is very low; however single-process I/O may cause MPI wait times

This application run was MPI-bound. A breakdown of this time and advice for investigating further is in the MPI section below.

CPU Metrics

Linux perf event metrics:

Cycles per instruction 1.39

L2D cache miss 27.3%

Stalled backend cycles 36.0% Stalled frontend cycles 4.1%

Cycles per instruction is moderate. Lower values are better but are application-dependent. High values may indicate memory latency or branch mispredictions.

MPI

A breakdown of the 67.8% MPI time:

Time in collective calls 100.0%

Time in point-to-point calls 0.0%

Effective process collective rate 4.34 MB/s

Effective process point-to-point rate 0.00 bytes/s

I/O

A breakdown of the 3.3% I/O time:

Time in reads

O.0%

Time in writes

100.0%

Effective process read rate

O.00 bytes/s

Effective process write rate

101 MB/s

Most of the time is spent in write operations with an average effective transfer rate. It may be possible to achieve faster effective transfer rates using asynchronous file operations.

Threads

A breakdown of how multiple threads were used:

Computation 0.0% |
Synchronization 0.0% |
Physical core utilization 6.0% |
System load 7.0% |

No measurable time is spent in multithreaded code.

Physical core utilization is low. Try increasing the number of processes to improve performance.

Memory

Per-process memory usage may also affect scaling:

Mean process memory usage 783 MiB

Peak process memory usage 1.09 GiB

Peak node memory usage 2.0%

The peak node memory usage is very low. Running with fewer MPI processes and more data on each process may be more efficient.

Energy

A breakdown of how energy was used:

CPU not supported % |
System not supported % |
Mean node power not supported W |
Peak node power 0.00 W |

Energy metrics are not available on this system.