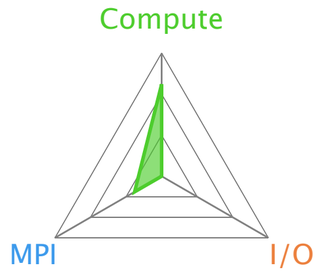
arm PERFORMANCE REPORTS

Command:	aprun -n 4 ./mandelbrot
Resources:	1 node (64 physical, 256 logical cores per node)
Memory:	252 GiB per node
Tasks:	4 processes
Machine:	xcimom2
Start time:	Tue Jul 20 11:10:07 2021
Total time:	34 seconds
Full path:	.



Summary: mandelbrot is Compute-bound in this configuration

Compute	74.7%	Time spent running application code. High values are usually good. This is **high**; check the CPU performance section for advice
MPI	25.3%	Time spent in MPI calls. High values are usually bad. This is **low**; this code may benefit from a higher process count
I/O	0.0%	Time spent in filesystem I/O. High values are usually bad. This is **negligible**; there's no need to investigate I/O performance

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

As little time is spent in MPI calls, this code may also benefit from running at larger scales.

CPU Metrics

Linux perf event metrics:

Cycles per instruction	0.63
L2D cache miss	35.3%
Stalled backend cycles	28.9%
Stalled frontend cycles	1.1%

Cycles per instruction is low, which is good. Vectorization allows multiple instructions per clock cycle.

MPI

A breakdown of the 25.3% MPI time:

Time in collective calls	<0.1%
Time in point-to-point calls	99.9%
Effective process collective rate	0.00 bytes/s
Effective process point-to-point rate	22.5 MB/s

I/O

A breakdown of the 0.0% I/O time:

Time in reads	0.0%
Time in writes	0.0%
Effective process read rate	0.00 bytes/s
Effective process write rate	0.00 bytes/s

No time is spent in I/O operations. There's nothing to optimize here!

Threads

A breakdown of how multiple threads were used:

Computation	0.0%
Synchronization	0.0%
Physical core utilization	6.3%
System load	6.3%

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	386 MiB
Peak process memory usage	389 MiB
Peak node memory usage	1.0%

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.