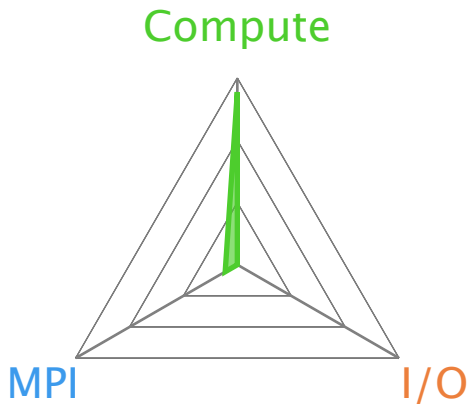


arm PERFORMANCE REPORTS	Command:	aprun -n 16 ./mandelbrot
	Resources:	1 node (64 physical, 256 logical cores per node)
	Memory:	252 GiB per node
	Tasks:	16 processes
	Machine:	xcimom2
	Start time:	Tue Jul 20 11:24:18 2021
	Total time:	8 seconds
	Full path:	.



Summary: mandelbrot is Compute-bound in this configuration

Compute	92.5%	<div></div>	Time spent running application code. High values are usually good. This is very high ; check the CPU performance section for advice
MPI	7.5%	<div></div>	Time spent in MPI calls. High values are usually bad. This is very low ; this code may benefit from a higher process count
I/O	0.0%	<div></div>	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 very 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	0.64	<div></div>
L2D cache miss	37.1%	<div></div>
Stalled backend cycles	28.2%	<div></div>
Stalled frontend cycles	1.4%	<div></div>

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

MPI

A breakdown of the **7.5%** MPI time:

Time in collective calls	6.5%	<div></div>
Time in point-to-point calls	93.5%	<div></div>
Effective process collective rate	0.00 bytes/s	<div></div>
Effective process point-to-point rate	99.7 MB/s	<div></div>

I/O

A breakdown of the **0.0%** I/O time:

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

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%	<div></div>
Synchronization	0.0%	<div></div>
Physical core utilization	25.0%	<div></div>
System load	25.0%	<div></div>

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	376 MiB	<div></div>
Peak process memory usage	389 MiB	<div></div>
Peak node memory usage	3.0%	<div></div>

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 %	<div></div>
System	not supported %	<div></div>
Mean node power	not supported W	<div></div>
Peak node power	0.00 W	<div></div>

Energy metrics are not available on this system.